COASTAL CAROLINA UNIVERSITY

2024 CCU Undergraduate Research Symposium Abstracts

(*Alphabetical by Presenter*)

Explaining the Pushback Faced by New Inclusive and Representative Films (Poster Presentation)
Anthony S Alter
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
It has been seen that recent films that contain information or characters that are underrepresented often don't see as much popularity as traditional films. This project aims to investigate the reasons behind negative attitudes commonly seen towards new inclusive films, in order to facilitate change and allow these films to spread positive messages. It is evident that many of these films fail to be understood properly, if at all. It is important to address this subject and increase the popularity of these films, as they are a great way for underrepresented groups to feel included and cared for. Movies are also an incredibly powerful way for messages and ideas to be shared. Individuals young and old will have their opinions shaped by films and carry these opinions with them throughout their lives. Furthermore, in our modern consumer culture movies can even go beyond the theater or television and be seen in toys, video games, or other various physical items. To investigate the reasons behind this phenomenon, students at a university will be surveyed and their opinions gathered. Students will be asked to rate films on a scale of one through ten, and then asked why they gave that rating. By doing this, one can hope that unbiased and initial opinions will be given and then later explained. The data recorded in this study is significant as it could potentially be used to help these films increase in popularity and improve individuals' outlook on them.

Analysis of Tobacco Pipe Artifacts from Archaeological Investigations at 38GE201, Laurel Hill Rice Plantation (Poster Presentation)
Nancy Jacquelyn Alvarez
Faculty Research Mentor: David Palmer, Department of Anthropology and Geography
An archaeological site offers an opportunity to reflect on the daily activities, social and economic structures of the time; even more so, it captures the humanity of a society not far behind in our history. Various artifacts recovered during archaeological investigations in 2022 and 2023 represent an enslaved African community at the late 18th-19th century Laurel Hill rice plantation adapting and overcoming was not a choice. This study focuses on the pipestem assemblage to aid in the dating of the site, to compare smoking activity within the lowcountry.

Our Declaration of Independence: College Students Escaping Abusive Backgrounds (Oral Presentation)
Egypt Shierra La'shay Anderson
Faculty Research Mentors: Eric Schultz, Edwards Center for Inclusive Excellence, and Tiffany Hollis, Department of Educational Studies
There is a lack of research on college students in higher education that captures the issues regarding access from an insider's perspective. To that end, I sought to reflect upon my own experiences with higher education as a student who has experienced health concerns, trauma, and decided to leave an abusive home to interrogate my multiple perspectives that developed over time on the issue of claiming independence in higher education. I found that the FAFSA does not have enough loopholes for a student like me who has experienced compound trauma, has had health concerns, who often experienced child abuse, and who left to attend college to escape those hardships and embark upon becoming independent. My experiences thus far have guided my behavior as a student who is experiencing various access-related issues. By using an autoethnographic approach and focusing on specific examples in my life, the essay will explore the process of becoming independent while showing the importance of the type of support fellow students have received from faculty and administration while working through this process. This project will use research and studies from various fields to examine and discuss this issue from varying perspectives. Consequently, I recommend that institutions extract lessons from these experiences to better serve the unique demographic presented by the growing population of students like me who might have run into obstacles with funding or the FAFSA and as a result, often do not receive equitable access to higher education.

Efficacy of multiple primer sets in detecting *Pseudo-nitzschia* along the Grand Strand (Poster Presentation)
Gabriel Ozzy Austin
Faculty Research Mentor: Megan Cevasco, Department of Biology
Pseudo-nitzschia is a genus of potentially harmful diatoms with certain species known to form harmful algal blooms due to the neurotoxins they produce. The goal of this experiment is to test the effectiveness of different primers covering ribosomal regions in detecting different species of *Pseudo-nitzschia* in local waters. Environmental DNA will be extracted and processed from local marine systems. The collected eDNA will be amplified using the ribosomal primers. The amplicons will be sequenced and sequence data from specific collection-sites will be compared and used to determine the primer efficacy and the taxonomic distribution of *Pseudo-nitzschia* species. The overall goal is to provide baseline data of the taxonomic distribution of *Pseudo-nitzschia* species.

Gender Disparities in Mental Health Problems Among STEM and non-STEM Undergraduates (Oral Presentation)
Alyssa Avallone, Clare Cuenya, Caitlyn Flemmer, and Abigail Hatcher
Faculty Research Mentor: Sharon Thompson, Department of Health Sciences
Post-pandemic, mental health is a growing concern in academic settings with more than 60% of college students meeting criteria for one or more mental health problems (Lipson, 2022). Furthermore, women with science, technology, engineering, or math (STEM) majors have reported to be more likely to suffer from depression than men (Ricard, 2018). Due to the limited research on the impact of STEM majors on the mental well-being of undergraduates, the purpose of this study was to examine depression, anxiety, obsessive-compulsive disorder and sleep problems by gender among STEM vs. non-STEM

undergraduates.
During 2023, online and paper-pencil surveys were distributed at a southeastern university after Institutional Review Board approval. Measures included: Sleep Disorder Symptom Checklist, Generalized Anxiety Disorder-7, Patient Depression Questionnaire-9, and Yale-Brown Obsessive-Compulsive Disorder Test. Frequencies, Fisher's Exact Tests, Multiple Linear Regression, and Odds Ratios were used to analyze data.
Participants (n = 929) were mostly female (68%), STEM undergraduate majors (58%), between 19 to 29 years (92.2%), and White (84.1%). Using scoring for the measures above, 51.13% of all participants had sleep problems, 26.5% had moderate to severe anxiety, 19.98% had moderately severe to severe depression, and 3.5% had severe or extremely severe obsessive-compulsive disorder. Odds ratios revealed STEM majors had a 1.5 greater risk of moderate to severe anxiety than non-STEM while females had a 3.81x greater risk of moderate to severe anxiety than males.
There is a need to further examine these issues to promote a sustainable and healthier academic environment.

Examining protein interactions between MatK and nuclear-encoded proteins to form a chloroplast splicing complex. (Poster Presentation)
Talana Lynn Banks
Faculty Research Mentor: Michelle Barthet, Department of Biology
The chloroplast is the site for photosynthesis in green plants and encodes a single maturase called Maturase K or MatK. Maturases are enzymes primarily found in prokaryotes or prokaryote-descendent organelles, like the mitochondria and chloroplast, which bind and aid the removal of introns in premature RNA. MatK is believed to be the primary enzyme for chloroplast group IIA intron removal. However, many nuclear-encoded proteins, such as DEAD/ DEAH-box RNA helicases (RH factors), RNC1, mTERF4, and WTF1, have been shown through various molecular assays to be involved in the removal of the same introns as MatK, suggesting the formation of a splicing complex. We aim to discern protein interactions between MatK and these various nuclear-encoded proteins. The RH factors are of particular interest in this study as these factors are known to mediate several different RNA functions, including intron excision, and have biomedical relevance. Although we know of the DEAD-box RH factor's involvement in nuclear RNA metabolism, their general understanding in the chloroplast is limited; we are studying their roles to explore this area further. We amplified and cloned the coding regions of target nuclear-encoded proteins and MatK using Gateway cloning technology. These coding regions will be expressed in bacterial cell lines and tested for protein interaction using a bacterial two-hybrid assay with a color indicator solution. Identified protein interactions will enable us to model and understand protein associations needed to facilitate chloroplast intron excision.

Addictive Algorithms and ADHD (Poster Presentation)
Karin Barrett
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
Attention Deficit Hyperactivity Disorder (ADHD) has become increasingly more common among young adults and children in recent years. Alongside this, the use of social media has also been rapidly increasing in the past few years. Among the various social media platforms available, TikTok, which became popular in 2019, has become one of the biggest social media platforms among young people today. Do these parallel trends have any correlation, or are there just higher rates of ADHD? This project

will explore the relationship between the rise of social media, TikTok specifically, potentially addictive algorithms, and ADHD in young people, through literature review.

Benchmarking Framework for HPC Storage System Performance Analysis and Bottleneck Identification (Oral Presentation)
Luke Beirne
Faculty Research Mentors: William Jones, Department of Computing Sciences, and Brian Atkinson, Los Alamos National Laboratory
Storage is a key component of any computing system, and this is especially the case in large-scale high-performance computing (HPC) systems. In the scientific computing community, large HPC clusters often employ specialized parallel and distributed file systems for a number of reasons including improving resilience and, more importantly, performance when the number of concurrent reads and writes are high. Such access patterns are common to parallel scientific computing applications; therefore, system designers and architects must ensure that applications will scale appropriately on the systems they deploy and that there are no extreme bottlenecks in these systems. As such, the ability to benchmark the many layers of the storage hierarchy in HPC systems is vital to making informed decisions about their development and implementation. Furthermore, as changes are made to the system software and middleware, it is important to quickly identify any regression in the functionality or performance of these systems. In this work, we present a suite of benchmarking scripts that can be used to obtain precisely the type of measurements needed to evaluate the storage systems and their interacting layers. In this presentation, we will provide results about their functionality and utility as well as some recommendations for future changes.

Social Media Representation on Campus (Poster Presentation)
Olivia Berkut
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
This project will investigate whether college students feel accurately represented by their campus social media presence and marketing campaigns. To further analyze this topic, the question “Is there a difference in how schools represent students and campus life versus the reality of student lives and culture” will be addressed. There is previous knowledge of social media representation. Still, there is a need for a deeper understanding of how those being represented feel and are affected by these choices made by their school. Underrepresentation/misrepresentation can lead to dissatisfaction, low self-esteem, and feelings of not belonging.
Additionally, previous research does not look at these problems from a collegiate point of view. Research for this project will be conducted with a mixed-methods approach consisting of a focus group and survey. This will allow for different types of data to understand students' points of view better.

Synthesis of Furan-Containing Phidianidine Analogues (Poster Presentation)
Tyler Berry
Faculty Research Mentor: Bryan Wakefield, Department of Chemistry
Marine natural products known as phidianidine A/B were isolated from the mollusk species *Phidiana militaris* in 2012. These molecules have been proven to interact with a variety of central nervous system targets related to pain management and dopamine transportation. It is therefore crucial that analogues of phidianidine are to be made and tested to explore their potential use as neuroprotective agents.
The purpose of this research is to determine what impact modifying the molecules' structure will have relevant to its biological activity. More specifically, the central 1,2,4-oxadiazole ring is to be replaced with a 2,5-furan ring. Additionally, analogues with varied substituents on the indole ring are to be made

and tested.
Two different methods were employed to create the furan-containing phidianidine analogue, in which a series of palladium-catalyzed cross-coupling reactions were used for both, with the methods differing with the addition of the indole ring. A Fischer indole synthesis was the originally used method, allowing for the analogues to be made and measured via NMR spectra. More recently, an uncommon acid catalyzed Friedel-Crafts reaction was conducted, which allowed for a more streamline synthesis.
The use of boronic acid catalyzed Friedel-Crafts reactions is still relatively new, but it has been used to create phidianidine analogues in good-moderate yields and in fewer steps than previously used methods. Thus, this reaction will be further used to create analogues with different central aromatic rings and varied substituted indole rings that are to be subjected to biological testing.

Crime, Punishment, and Politics: Perceptions Through the Lens of Terror Management (Oral Presentation)
Katelyn N. Blanchard
Faculty Research Mentor: Terry Pettijohn, Department of Psychology
The purpose of this study is to explore how Left-and Right-Wing voters perceive the severity of crime and subsequent punishment after acknowledging the idea of death. Terror Management Theory explains that the idea of preserving one's image as a "good" person is the typical response to the fear of one's own death, often leading people to view and judge others in correspondence with their beliefs about human morals. The hypothesis predicted that people made aware of their own deaths, especially those who hold Right-Wing beliefs, will be more likely to hold harsher judgements of social transgressions and the punishments for them. This study involved dividing college-age participants (N=49) into three groups, asking them to complete a survey on their perceptions of crimes and appropriate punishments. Participants were either given a survey that asks about their fear of their own death, their fear of the deaths of others, or a self-esteem questionnaire before being asked to judge the severity of a series of social transgressions, both personal and interpersonal, and the severity of their punishments. The results found that people, in general, rated higher severity for punishments when made aware of their own death, and that Left-Wing voters made aware of their own death supported more severe punishments for transgressions against the individual, while Right-Wing voters made aware of the death of others supported more severe punishments for transgressions against the individual.

Spiritualism: How a Childhood Prank Sparked a Movement (Oral Presentation)
Jordan Blazer
Faculty Research Mentor: John Navin, Department of History
Spiritualism was born from a prank Margaret and Kate Fox performed on their mother when they were children. This prank spiraled out of control and led thousands of grieving people to believe they were able to speak with deceased loved ones, with the help of "spirit mediums." Leah Fish, the older sister of Margaret and Kate, latched on to her sisters' rising fame and became their self-proclaimed manager. Others quickly joined the trending movement and proclaimed their spiritual abilities. These new mediums proceeded to charge admission fees to perform their spiritual talents in front of crowds, or to host personal seances for families in mourning. This paper will show how this sensational hoax that created a global religion (still in practice over one hundred and fifty years later), originated from a controlling older sister and her mischievous and misled younger sisters.

Developing a Community Screen for Heartworm to Determine an Endemic Infection Risk in the Community (Poster Presentation)

Alexandra Bonner

Faculty Research Mentor: Paul Richardson, Department of Chemistry

Heart failure in pets can be attributed to various filaroid parasites, with *Dirofilaria immitis* being a common culprit known for its devastating impact in our community. Pet owners in our state incur significant expenses each year to combat the harm caused by this parasite. The implementation of a preventative screening approach with rapid and accurate results could provide the community with valuable data regarding the potential risk posed by the parasite. Monitoring heartworm prevalence in the mosquito population serves as a proactive and economical strategy to safeguard our community against heartworm infections. Existing tests often require blood samples from the host, serving a diagnostic rather than a preventative purpose. These tests rely on detecting female hormones of heartworms, which may lack accuracy unless the parasite is in a specific developmental stage, our proposed method offers a more reliable alternative, since the COX1 gene is essential for the parasite's survival. To address this issue, we proposed the development of a cost-effective and precise screening method using Polymerase Chain Reaction (PCR) with BLAST-verified primers for the detection of the Cox-1 gene of heartworms in mosquitoes. This screen holds the potential for cost-effective and timely intervention, reducing both economic burden on pet owners and the overall prevalence of heartworm infections in our community.

She's Got the Beat: Female Musicians Around the Globe (Poster Presentation)

Amelia Bonner

Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence

Ever since I was a young girl, I have always played the drums. However, not just a regular drum set, but a particular kind called the steel drums. These instruments originate from the island of Trinidad and Tobago. Throughout my time playing the instrument, I have noticed how I am usually one of the only females playing in any steel drum group I have been a part of, and my male colleagues usually underestimate me. This has made me wonder what it's like in other countries to be a female musician. So, in my project, I would like to travel abroad and conduct interviews with women on their experiences as a musician. I want to specifically focus on the women in Trinidad and Tobago because, in the 1950s, women were excluded from playing in steel bands. However, last year in their past Panorama competition, all the winning bands were women-directed, which could have impacted how women are seen in the music industry there. There is not much research done on this specific topic, but I would like to expand on what is already known. I would like to make this a documentary, recording what people have to say on the topic. I believe that it's significant to go abroad to conduct social justice research and see how America can learn inclusivity from other countries and cultures. It has not been done before in the Center of Inclusive Excellence, and I would like to be the first to do it.

Junk to Jewelry (Poster Presentation)

Isaac William Brewer and Shannon Bischof

Faculty Research Mentor: Joseph Minnich

Through innovation, the maker movement is inspiring creative minds to explore science, technology, engineering, and mathematics. Makerspaces are increasingly being implemented in universities, libraries, and community centers alike. These spaces contain varying levels of technology for rapid prototyping such as 3D printing, laser cutting, pressure forming, and heat pressing. One of the most versatile and popular technologies found in Makerspaces is Fused Deposition Modeling (FDM) printing. Prototyping with an FDM printer generates plastic waste through structural supports, build-plate adhesion structures, filament type or color swaps, and obsolete prototypes. The most utilized plastic is Polylactic Acid (PLA) because of its low cost, reliability, and renewability. PLA is not collected by

municipal recycling facilities and therefore would benefit from an accessible end of life protocol to avoid landfills. Repurposing PLA waste can allow makerspaces to approach circular production goals. Taking advantage of existing technology such as heat presses, this work proposes an easily recreated protocol makerspaces can utilize to transform PLA waste into valid stock material for laser cutting. The method involves melting down and compressing obsolete prototypes, Benchys, or PLA waste into thin sheets using a handheld heat press and then using the PLA sheet as reuseable laser cutter stock material.

Prescribing Drug Dosages Using Calculus (Oral Presentation)
Keith Bullard
Faculty Research Mentor: Rajendra Dahal, Department of Mathematics
For most drugs, there is a concentration below for which the drug is ineffective and a concentration above for which the drug is dangerous. Physicians and pharmacists must know the proper dosages to prescribe to patients in order to be effective for the individual, without causing repercussions. In this presentation, we will study how the dosage and dosing intervals can be modified to ensure a safe, yet efficient level of the drug in the bloodstream. Addressing the question of the appropriate dosage and frequency of administration is crucial in pharmacology, so we will find the appropriate dosing schedule using calculus.

In silico comparative analysis of osteichthyan homologs of the Bicaudal C developmental regulator (Poster Presentation)
Cody Casey
Faculty Research Mentor: Chiara Gamberi, Department of Biology
Bicaudal C (BicC) is an RNA binding protein originally discovered in the fruit fly Drosophila melanogaster1,2 which has homologs in virtually all vertebrates. In flies, BicC is an RNA binding protein and negative regulator of messenger RNA translation that contributes to establishing anterior-posterior oocyte polarity in the ovary and the corresponding embryonic axis. BicC also has somatic functions, e.g., regulating cell fate3, establishing organ laterality4and regulating renal cell function and proliferation3,5,6. BicC loss-of-function mutations cause the formation of renal cysts similar to polycystic kidney disease from flies to humans5,6,7. The BicC protein contains two canonical K homology (KH) RNA binding domains, three non-canonical KH-Like domains, and a Sterile Alpha Motif (SAM) domain similar to the one in the Drosophila RNA binding protein Smaug2,8.The strong evolutionary conservation of BicC implies that it is a fundamental biological regulator.

Multimedia storytelling: Book banning in South Carolina (Poster Presentation)
Taylor Marie Castelot
Faculty Research Mentor: Anna Mukamal, Department of English
This poster showcases findings from an interactive multidisciplinary website that I created about book banning in South Carolina. While the website on which the poster is based has seven major sections, spanning from audio of interviews with stakeholders in the book banning debate (e.g. teachers and librarians) to current news and state-level legislative efforts for and against book banning, the poster focuses on both macro-level and micro-level trends. For the macro-level, the poster presents visualizations and analysis of data from a major public index of books challenged and banned during the 2022-23 school year. For example, the data shows that of all the counties in SC, Beaufort County has challenged and banned the most books (relatedly, my research features an interview with a Beaufort County Public Library librarian). For the micro-level, the poster illustrates and recommends five books—one each of the children's, young adult, poetry, adult fiction, and nonfiction genres—that were banned in SC during the same period. These recommendations stem from my close reading of the books

compared to critiques from those who advocate for banning them. This project focuses locally not because I am from SC, but because book banning is more prevalent here than my home state of Connecticut. As a student who believes in the freedom to read, this problem deserves attention because book bans are increasing in Red and Blue states nationwide. Overall, this public-facing poster showcases my research on this topic and synthesizes my English major and New Media and Digital Culture minor.

Quantifying the Maternal Transfer of Microplastics within the Spiny Dogfish (*Squalus acanthias*) Species (Poster Presentation)
Abigail Caviris
Faculty Research Mentors: George Boneillo and Daniel Abel, Marine Science
Pollution in the form of microplastic particles is ubiquitous throughout the marine environment with particles being found in many marine species. Microplastics have been observed in the digestive tracts and livers of both adult and young-of-year shark species, but there remains a gap in research regarding the maternal transfer of microplastics during the internal growth and development of fetal sharks. In this study, the digestive tracts (n=19), livers (n=20), yolk sacs (n=9), and ova (n=3) of seven pregnant female Spiny Dogfish (*Squalus acanthias*) and their subsequent offspring were analyzed for the presence of microplastic particles. Preliminary results indicate that microplastics are present in the liver and digestive tracts of both adult and fetal spiny dogfish. The majority of these microplastics appear in the form of microfibers with blue as the primary coloration. Data is currently in the process of being collected on the presence of microplastics in the yolk sacs and ova of the samples.

Utilization of Relative Condition Index (Kn) of White Shrimps (*Litopenaeus setiferus*) for Habitat Assessments in Winyah Bay, SC (Poster Presentation)
Eric Cha
Faculty Research Mentor: Ryan Rezek, Department of Marine Science
Penaeid shrimps are among the most economically important fisheries in the southeastern United States. White shrimps (*Litopenaeus setiferus*), which compose the majority of catches for commercial shrimp fisheries in South Carolina, use estuarine habitats as nursery and feeding grounds. Understanding the role of different estuarine habitat types in supporting this species is important for effective management and conservation strategies. To evaluate habitat quality, the general health and vitality of shrimps were assessed across spatial and temporal scales using the relative condition index (Kn). Relative condition index is based on the weight of individual shrimps (Wo) divided by the estimated weight (Wc) calculation based on length-weight relationships. The length-weight relationship of white shrimps from Winyah Bay, South Carolina, was studied with 588 specimens collected from December 2022 to December 2023 at 10 sites that spanned riverine, bay, and marsh sites. Specimens were measured by carapace length, ranging from 0.56 to 4.61 cm, and weighed with wet weights ranging from 0.03 to 24.59 g. An ANOVA test showed a significant difference in shrimp Kn ($p < 0.05$) between sites. Post hoc analysis revealed that shrimps from Black River and a mid-estuarine site (located near the center of the bay respective to the mouth) displayed significantly higher Kn values with means of 1.39 ± 0.028 and 1.27 ± 0.028, respectively, indicating good health and growth. The results of this study demonstrate that shrimp habitat quality may vary spatially and temporally, highlighting important areas for growth during their life cycle and migration.

Educational Resources for LGBTQIA+ Parents (Oral Presentation)
Kaitlyn Chance
Faculty Research Mentor: Ina Seethaler, Department of Women's and Gender Studies

This project will address the limited or lack of education available for LGBTQIA+ parents and specifically non-binary people going through pregnancy from Planned Parenthood. The goal of this research project is to find what resources are available, evaluate the benefits of what exists and also critique what needs to be added in order for planned parenthood to be inclusive in what resources they have for LGBTQIA+ people with children. Planned parenthood is organized per state which makes this difficult considering the political climate of South Carolina and other southern states at the present, but I believe the conversation is still worth researching and investigating. The political aspects of Roe v. Wade being overturned has limited how Planned Parenthood can address care for womb having individuals, this topic should be researched for that and many other reasons. I plan to work with a Planned Parenthood representative to get as much detailed information as possible on what resources exist for LGBTQIA+ people having kids, what limitations are fighting equitable education and evaluating the kind of education to see if more is needed to represent the experiences of parenthood and childbirth for nonbinary people who don't have resources for navigating pregnancy and/or parenthood. Some ways of evaluating the resources available will be the year the education was written, the language used to describe and instruct LGBTQIA+ people in birth and parenthood as well as if they include or leave out nonbinary individuals from the discourse of parenthood or birth experience. This investigation will shed light on the access to educational resources for LGBTQIA+ people who are becoming parents/giving birth.

Floodplain sedimentation shift probably linked to early 20th-century land-use change in the Southeast United States (Oral Presentation)

Christian Chomey

Faculty Research Mentor: Zhixiong Shen, Department of Marine Science

The land cover land use of the Eastern United States has been changing for centuries since the 1600s, with land clearing for agriculture along with deforestation peaked in the late 19th to early 20th century, followed by soil conservation and reforestation starting in the 1930s. These changes have had profound impacts on soil erosion and hydro morphologic dynamics. A large number of dams were also constructed during the first half of the 20th century along rivers in the region that interrupt sediment transport. These are all expected to affect sediment transport and deposition in the lowland coastal area. In this study, we will analyze grain-size of sediments cores collected in oxbow lakes of the Pee Dee River to investigate this issue. Our preliminary data shows that there is an abrupt shift of sediment to finer sizes in the middle of our cores that is probably related to the combined effect of reduced soil erosion and sediment interception by dams during the first half of the 20th century. We will present more data to verify this preliminary observation.

Expression of Alzheimer's Genes Alter Movement Properties in the Fruit Fly (*Drosophila melanogaster*) (Poster Presentation)

Anna Belle Cook

Faculty Research Mentor: Ryan Yoder, Department of Psychology and Fang Ju-Lin, Department of Biology

The expression of Alzheimer's genes in drosophila alters their behavior and climbing abilities. Flies with the Alzheimer's gene as well as rescue flies with the Alzheimer's gene and a rescue gene added were bred to determine differences in phenotype, and. A movement analysis was conducted to compare the kinematic movement properties among control, rescue, and Alzheimer's groups. ~21 day old flies were treated with CO2 and then placed in a dark drawer for 30 mins. Drosophila were then placed individually in 17 mm arenas and movement was recorded for 5 mins. Total distance, peak speed, path circuity, and number of stops were analyzed with EthoVision software at 3 frames/second. Fly movements were sorted into long, medium, and short progressions. A separate one-way between-groups ANOVA was

performed for each measure. Rescue flies had significantly higher peak speed during long and short progressions than Alzheimer's and control flies. Rescue flies also had significantly longer average distances during long progressions than both Alzheimer's and control flies. These results suggest that the rescue genes caused the flies to move considerably more and at greater speeds than the other groups. Additional studies are needed to continue to explore the long-term effects of the rescue treatment.

Theatre as Festival: Creating, Sharing, Celebration. (Oral Presentation)
Isaiah Cook
Faculty Research Mentor: Benjamin Sota, Department of Theatre
This research investigates cross-cultural dimensions of mainstream U.S. theatre by juxtaposing it with global practices beyond the American theatre "industry." The exploration originated from a research fellowship under the Center for Inclusive Excellence (CIE), which funded a trip to Hawaii. There, we immersed ourselves in a theatre culture dedicated to community service, as evidenced by performances for respected elders (Kapuna) with the UH Manoa Joymobile. Understanding how land, community, and culture influence artists' exploration and creation forms the core of this research, shedding light on how daily practices and attitudes can shape the artistic landscape.
This foundation led to our primary focus on the (PQ) 2023 QEP, where Coastal Carolina University, in collaboration with artists and academics, journeyed to Almaty, Kazakhstan. Working with theatre students from the Kazakh National Academy of Arts, we presented at the Prague Quadrennial, exploring the intricate interplay of culture, geography, and artistic expression. Guided by Professor Benjamin Sota, collaborative theatrical pieces were devised, performed alongside the Kazakh students' exhibition at the Prague Quadrennial.
The research extends to Utah, where we analyze the practices of two Shakespeare Companies, providing a comprehensive comparison. By drawing parallels and distinctions across these diverse experiences, this study seeks to unveil insights into how cultural contexts, supported by initiatives like the CIE, shape artistic landscapes globally.

Comparison of Cultured and eDNA Bacterial *Vibrio* Sequences Collected From Local Waters (Poster Presentation)
Morganne Coon , Kasey Smith, Raina Truesdale, and Tennisyn Parrish
Faculty Research Mentor: Megan Cevasco, Department of Biology
Bacteria found within the genus Vibrio can be potentially harmful as they lead to bacterial infections. The presence of Vibrio species in water samples collected from local public shellfish harvesting sites along the Grand Strand are examined using multiple approaches. The samples from each local site went through filtration and then got separated by using DNA extraction and isolation. Extracting DNA allows for the purification of DNA for sequencing and isolation promotes growth for the specific taxa used in characterization. The retrieved environmental DNA allows comparisons to be made with cultured Vibrio species. DNA was extracted from previously cultured Vibrio colonies as well as from isolated filtration of the water samples. Following DNA extraction and filtration, genomic sequencing was done on the cultured and environmental DNA. Using the comparative sequence data, similarities between collected eDNA sequences and cultured sequences were analyzed to identify the Vibrio species that are present in local waters. Due to the possible health hazards associated with Vibrio, being knowledgeable on the presence of specific species residing at local shellfish harvesting areas will allow us to make more educated decisions on the management and protection of those participating.

Macroalgae and Benthic Microalgae (Biofilm) Abundance After Dredging Cycles in White Point Swash, South Carolina (Poster Presentation)

Jack Corbin

Faculty Research Mentor: Angelos Hannides, Department of Marine Science

This study will examine the benthic microalgae, commonly known as biofilm, and macroalgae abundance after periods of municipal dredging in White Point Swash, South Carolina. Much of this work will be in addition to the foundation laid by Dr. Angelos Hannides and his students, specifically Nathan Easterling. They have previously researched this topic, and used many of the same techniques. This study will provide further support for the hypotheses stated in the Easterling paper (Easterling, 2023). In addition, it will examine the direction of nutrient diffusion: sediment to water column or vice versa. One major difference between the study that I am conducting and the Easterling paper from last year will be the focus on determining the sediment flux magnitude and direction. I will be using Fick's First Law to calculate the flux using the data from our porewater and water column samples.

Dredging is used worldwide for a variety of reasons, both economic and ecological. This study will be useful in providing further evidence for the link between dredging and algal blooms. Previous studies have looked into this link, and found that following dredging cycles, phytoplankton concentrations and nutrient concentrations increased greatly (Fernandes et al. 2023). Considering the danger of algal blooms and how common they are, this study will monitor the correlation between algae growth and dredging in local swashes.

Total Polyphenol Concentration in Gluten-free Beers (Poster Presentation)

Kaitlinne Crosco

Faculty Research Mentor: Budner, Department of Chemistry

Traditional beers are made using barley, which contains gluten. However, the market is changing to incorporate more gluten-free foods and beverages for daily use, including beer. In this study, different gluten-free grains that have been brewed and sampled are millet, sorghum, and buckwheat. Each of these different grains will have produce a slight variation in the polyphenol concentration. Polyphenols can be an indicator of the quality of the beer made from these grains; polyphenols can determine the beer oxidation and haze formation. The average concentration for polyphenols for traditional beers is between 150 and 330 mg/L. About two-thirds of this average comes from the grain type that is used in brewing. The other one-third comes from Hops, which are not present in the samples that have been tested. Typically, darker grains will have a higher concentration of polyphenols than lighter grains will. Buckwheat is a naturally darker grain than the others tested, and the average polyphenol concentration for buckwheat is higher than that of the other grains. Knowing the different ranges in polyphenol concentration for each of these gluten-free grains can be used to help identify grain selection for future gluten-free beers because beers that have higher polyphenols tend to be hazier beers than those will lower polyphenols.

A Comparison of Methods to Determine Intensity During Aerobic Exercise with Blood Flow Restriction (Poster Presentation)

Gianna Curto

Faculty Research Mentor: Jakob Lauver, Department of Kinesiology

The addition of blood flow restriction (BFR) devices to aerobic exercise has been shown to result in significant adaptations. However, one potentially problematic methodological approach has been the use of heart rate to proscribe exercise intensities during aerobic exercise with BFR, as the addition of BFR has been shown to result in an increased heart rate at the same work rate compared to free-flow conditions. This would result in a lower than desired work rate (exercise intensity) and therefore training

volume during aerobic exercise with BFR. The decreased training volume would then make comparisons to free-flow conditions difficult as the decreased training volume would impact training adaptations. Therefore, this project's objective was to compare the physiological responses to two different methods (Heart Rate, Work Rate) of prescribing aerobic exercise intensity with BFR. Participants completed three separate laboratory sessions. During the first session, participants completed a graded exercise test to their maximal ability. Participants then completed the two experimental conditions in random order, Heart Rate (HR-BFR), Work Rate (WR-BFR). The intensity for WR- BFR was 70% of ventilatory threshold (VT), intensity for HR-BFR was 50% of heart rate reserve. Each protocol consisted of ten 2-minute work intervals interspersed with 1-minute recovery intervals. Blood flow restriction pressure was 80% of limb occlusion pressure. VO2, muscle excitation, tissue oxygen saturation (StO2) was assessed throughout each protocol. We hypothesize that the use of heart rate to prescribe intensity will result in lower physiological responses compared to utilizing work rate.

Do Hermit Crabs Rock Out to Beethoven When They're Hungry? The Impacts of Anthropogenic Noise on Animal Behavior (Poster Presentation)

Ashley Dalleske

Faculty Research Mentor: Eric Rosch, Department of Marine Science

Hermit crabs are often found in the intertidal zone of the beach and therefore have to manage biological and physiological stressors such as predation, desiccation, and large fluctuations in temperature. Living in this zone also means that hermit crabs are directly exposed to many human activities. Whether it be bringing a pet to the beach or playing music, humans are altering their natural habitat and potentially increasing their stress. It is known that hermit crabs detect and respond to sounds and that crustaceans are even known to communicate with acoustics. However, our understanding of how auditory pollution affects behavior is limited. In this study, changes in hermit crab behavior, when exposed to auditory pollution (i.e. music), were assessed. Initially, hermit crabs were exposed to various music genres and scored on their reaction. Then, the music genre with the greatest effect, classical, was played with food present in the tank and the number of aggressive interactions was used as a proxy for understanding how their ability to detect the presence of food was affected by anthropogenic noise pollution. The findings suggest the ability of hermit crabs to respond to food cues, indicated by a lower frequency of interactions, is inhibited by noise pollution. These results add to our knowledge of our growing impact on marine life.

Pterois volitans (Lionfish) are opportunistic predators and eat indiscriminately regardless of size (Oral Presentation)

Ashley Dalleske

Faculty Research Mentor: Eric Rosch, Department of Marine Science

Lionfish are native to the Indo-Pacific but were first observed in Roatan in 2009 and it quickly became the most densely populated area within the Mesoamerican Barrier Reef system. Numerous studies have shown that lionfish have the potential to threaten biodiversity and severely harm ecologically important reef fish. The purpose of this study was to determine if there is a relationship between lionfish body length and gut composition as well as the size of the prey. Lionfish were spear-hunted on reefs in Roatan; stomach content analyses were performed; fish prey items were identified to the family level. While gut analyses showed that lionfish primarily predate on fish from the family Rhynchocinetidae, they were found to be opportunistic hunters and the length of the lionfish did not influence prey size. This promotes the notion that all lionfish, regardless of size, are harmful, and should be taken into consideration for management and reef conservation strategies.

Combining Explicit Learning Instructions and High-Pressure Simulations During Practice Prevents Choking Under Pressure (Poster Presentation)

Elisabeth Daniels

Faculty Research Mentors: Marcos Daou, and Gregory Martel, Department of Exercise and Sport Science

Determining practical ways to enhance motor learning and performance are crucial for adaptive behavior under high-pressure. Research has shown that external focus of attention; learning a skill implicitly; and exposing individuals to high-pressure practices facilitate performance under high-pressure. However little is known about a synergistic effect to prevent choking. This study examined a potential synergistic effect to maximize performance under high-pressure on beginners who learned dart-throwing techniques. METHODS: Eighty participants performed a 10-trial pretest and learned dart-throwing techniques (6 blocks of 10 trials) on day 1, and on Day 2 (24 hours after practice), they performed two posttests (low and high pressure – 10 trials in each block). Individuals were divided into four practice condition groups: (1) explicit learning high-pressure practice (EH); (2) explicit learning low-pressure practice (EL); (3) analogy learning high-pressure practice (AH); and (4) analogy learning low-pressure practice (AL). To increase pressure on day 1, participants were recorded while practicing and told their kinematics would be analyzed. On day 2, during the high-pressure posttest, in addition to recording the trials, participants were told the best 5 performances would receive money; and that the previous participant had the best result so far. For both low-pressure practice groups and low-pressure posttest, the instructions were to do their best while aiming for bulls-eye. RESULTS: To assess motor learning two 2 (Practice Pressure: low vs. high) x 2 (Practice Instructions: explicit vs. analogy) x 2 (Post-Test: low- vs. high-pressure) mixed-factor ANOVAs, with repeated-measures on the last factor for accuracy and precision were utilized. Results revealed that there was a statistical significant difference between groups during the high-pressure posttest ($F(1,75) = 6.641$, $p=0.012$). Specifically, the explicit learning high-pressure practice group showed superior performance. Mean scores were as follows: Explicit High-pressure (M 7.19 cm ± 2.44 cm); Analogy High-pressure (M 9.79 ± 2.21); Analogy Low-pressure (M 10.07 ± 2.39 cm); Explicit Low-pressure (M 14.02 cm ± 5.69 cm) (lower score represents better performance/learning). CONCLUSIONS: Combining explicit learning instructions and high-pressure simulation during practice provided a superior performance on the posttest and prevented choking under pressure.

Comparing the Seasonal Abundance of Vibrio Bacteria of Coastal Waters (Poster Presentation)

Brandon Decker

Faculty Research Mentor: Megan Cevasco, Department of Biology

Vibrio is a genus of Gram-negative bacteria and is a diverse group of microorganisms with significant ecological and health implications. Among them are many known species that cause severe infections in both humans and wildlife. Seasonal changes of Vibrio populations are important to monitor for its potential impacts on human and environmental health. This study focuses on comparing the seasonal abundance and diversity of Vibrio bacteria in coastal water during the fall of the year 2023 and winter of 2024 using metagenomic analysis focusing on Gammaproteobacteria. Applying techniques of DNA extraction from the collected water samples, PCR amplification, library construction for sequencing on the Illumina iSeq 100 generates sequence data for identification and comparison of seasonal Vibrio bacteria populations. We aim to study and monitor coastal waters to better understand how Vibrio ecology may affect potential health risks that may be associated with season fluctuations of certain infectious Vibrio populations. The results are expected to indicate a significant seasonal variation in the abundance of Vibrio species, with distinct patterns observed between fall and winter seasons. The comparisons from this study can show seasonal shifts in the populations to better understand the population genus and create base line data for comparison in the future.

Characterization of a unique RNA regulator element in the 5' UTR of rpoB in Lactobacillus (Poster Presentation)

Lauren M. DeJong

Faculty Research Mentor: Brian Lee, and Gabriela C. Pérez Alvarado, Department of Chemistry

The gut microbiota supports probiotic Gram-positive lactic acid bacteria which include many lactobacillus species. Lactic acid bacteria are invaluable to industries due to their importance in the production of fermented products like yogurt and cheese, which may contain live cultures that help protect the body from food-borne pathogens. These bacteria contain small regulatory RNA (sRNA), which are usually between 50-300 nucleotides in length as well as cis-acting regulatory elements within the mRNA transcripts of certain genes. Non-coding sRNA and cis-acting regulatory elements often contain secondary structure motifs that may play a role in regulating translation of mRNA transcripts into proteins or may affect RNA elongation during transcription. This study aims to characterize the lacto-rpoB motif located in the 5' untranslated region of the rpoB gene for the RNA polymerase β subunit. The lacto-rpoB regulatory element was found to have a two stem-loop structure that contains a conserved sequence of 8-11 nucleotides within the loop region's first hairpin. Directly after the second hairpin, there is a stretch of uracil residues, which is generally indicative of an intrinsic rho-independent terminator. Our working hypothesis is that these hairpin structures may regulate gene expression in several ways: binding to an up/downstream sequence within the rpoB mRNA, interacting with a protein that recognizes the first stem-loop's conserved sequence, or intermolecular recognition of other RNA transcripts associated with related genes in Lactobacillus. Further research needs to be done to determine how the lacto-rpoB motif varies between related species and to determine its structure and regulatory role.

Cyclization Reactions to Construct the Core of Flinderole C (Poster Presentation)

Sadie Disselkoen and Christina Gentile

Faculty Research Mentor: Bryan Wakefield, Department of Chemistry

Malaria is a disease caused by mosquitos, a plasmodium parasite. Flinderoles C, isolated from plants of the Flindersia genus, is a new class of antimalarial bisindole alkaloids that is used to treat malaria. Indoles and indole-containing compounds such as flinderoles A-C are important components of natural products and the pharmaceutical industry. Flinderole C is reported to be the most active, thus its synthesis is being explored in the laboratory. The purpose of these laboratory experiments is to make progress towards efficiently synthesizing flinderole C. The 1,2-pyrroloindole is a key structural component of flinderoles A-C that has been successfully synthesized and reported. In the lab, diphenyl phosphate-catalyzed Friedel-Crafts reactions are explored in reaction with the allylic alcohol. While these have proven difficult to be cyclized, other approaches are being explored. In a few recent reports, boronic acid catalysts have shown to be a promising strategy to activate alcohols and carboxylic acids for cyclization of 5 and 6-membered rings. Using this strategy in the lab, boronic acid is reacted with the tertiary alcohols on the base molecule in hopes to be more efficient in cyclizing the third ring onto the indole in the formation of the core of flinderole C.

Korean Culture, Korean Wave (Hallyu), Korean Tourism, and Hyperlocal Tourism (Poster Presentation)

Benjamin Dolak, Isabelle Holland, and Karaline Fandrich

Faculty Research Mentor: Bomi Kang, Department of Hospitality, Resort and Tourism Management

This immersive study aims to use qualitative data obtained through one-on-one interviews conducted in South Korea to shed light on the impact of Hallyu and Korean culture to Korean tourism, and how Korean tourism relates to growing Hyperlocal tourism. Hallyu tourism, also known as the Korean wave,

is tourism to Korea that stems from an interest in Korean culture. Korean culture in the forms of K-dramas, K-pop, and K-beauty have become increasingly popular worldwide, promoting tourism drastically. Hyperlocal Tourism is a new phenomenon in the tourism industry, involving tourists' desire for a more authentic experience representing the area's true beauty, history, and cultural background. The purpose of this study is to demonstrate the impact Hallyu has on the world and how it has brought tourists to Korea to enjoy the uniqueness of this country. It also focuses on implementing the term "Hyperlocal Tourism" and how tourists relate or describe it without prior knowledge of being introduced to it. Questions this study posed to its participants include topics such as "Are you interested in any K-drama and movie, K-pop, K-beauty, K-food, K-medical, if yes, how did you become interested in this?" and "Can you describe the hyper-local experience in the tourism context? What does hyper-local experience mean to you? If you don't know what hyper-local experience is, what is your first impression of hearing the word? Based on the results the interviews, the study will aim to develop further understanding of driving factors of tourism in South Korean context.

Tart Cherry Juice Supplementation on Sleep Quality in Female Collegiate Athletes (Poster Presentation)

Jenna Downey

Faculty Research Mentor: Brandon Willingham, Department of Kinesiology

Sleep hygiene refers to pre-sleep behaviors and environmental conditions that promote sleep and adequate recovery. Likewise, tart cherry juice (TCJ) consumption is known to promote sleep quality. However, to the authors' knowledge, no study has directly examined if TCJ supplementation provides an additive benefit compared to the standard of practice (i.e., sleep hygiene education) in female collegiate athletes. Therefore, the purpose of this study is to determine if TCJ supplementation enhances sleep quality compared to sleep hygiene education. 14 female collegiate beach volleyball athletes completed this 21-day study; Week 1 served as baseline with no intervention, Week 2 implemented sleep hygiene education from a sleep physician, and Week 3 implemented TCJ supplementation. Repeated measures analysis of variance will be used to detect differences between objective measures of sleep (i.e., wrist-worn actigraphy), subjective measures of sleep (i.e., Pittsburgh Sleep Quality Index, PSQI; and Athlete Sleep Behavior Questionnaire, ASBQ), and total quality of recovery (TQR) each week. It is anticipated that sleep hygiene education will increase sleep quality and quantity, compared to baseline. Further, we anticipate that TCJ supplementation will provide an additive effect, beyond sleep hygiene education alone. We anticipate sleep hygiene education and TCJ supplementation will be effective strategies to support sleep.

The exploration of Retina-Related Diseases and its Physiological Biomarkers (Poster Presentation)

Jeliscia Edwards

Faculty Research Mentor: Brian Lee, Department of Chemistry

The eyes may provide systemic insights on a physiological level. This study aims to highlight the intricate connections between retina-related diseases and the underlying biochemical functions of the human body. This internship program was developed to provide real time exposure into the complex interplay between retinal health and systemic physiology. The goal of my research aims to uncover patterns, correlations, and potential biomarkers associated with a spectrum of retinal conditions.

This internship took a multidisciplinary approach, combining medical imaging, biochemical analysis, and clinical data, to corroborate the eyes' innate ability to be an identifier of underlying health conditions. Moreover, this research aspires to showcase the importance of diagnostic accuracy, as it pertains to detection and prevention of major complications both retina related, and full body related.

In summary, this study represents a significant step towards bridging the gap between ocular health and

systemic well-being, while also giving undergraduate majors the opportunity to be exposed to alternative career pathways post-undergrad.

A Comparison of Borderlands In The Hispanic World Through Photography (Poster Presentation)
Mateo Elmore
Faculty Research Mentor: Edurne Beltran de Heredia Carmona, Department of Languages
Two of the most popular borders in the Hispanic world are the US-Mex border and the Africa-Spain border. Thousands of individuals cross the border every year seeking for refugee and a better life, and there are big political controversies around "the problem of the border". However, photographers like Sergi Camera, Griselda San Martin, John Moore, Guillermo Arias, to name a few, capture photographs that show the hardship and the poor conditions that migrants endure when crossing these borders. These authors' photographic collections not only demonstrate the need of giving visibility to humans crossing the border but also show that the border itself isn't the problem but the social circumstances and human rights violations that are experienced before and after becoming migrants. Taking up from cultural theory and photographic theory, this poster aims to demonstrate the similarities and differences in human rights representation that contemporary photographers are using in their collections like "Negro", "Undocumented", and "The Wall".

We All Play the Same: Investigating the Effects of Title IX and NIL Policies on International Student-Athletes in the US (Oral Presentation)
Coco Farrow
Faculty Research Mentor: Richard Aidoo, Department of Political Science
This research paper investigates the impact of Title IX and Name, Image, and Likeness (NIL) policies on international student-athletes in the United States. The study examines how these policies have created sports discrimination for international student-athletes, which affects their ability to participate in various income-generating and career-enhancement activities in the United States. By adopting a mixed methods approach that combines quantitative and qualitative research methods, the paper aims to provide a comprehensive view of the perceptions and experiences of international student-athletes within these policy frameworks. The research draws on interviews, text analysis, and case studies to achieve the research objectives. The survey results highlight a pattern of discrimination faced by international student-athletes and the implications for policymakers and other educational institutions involved in collegiate sports. The paper concludes that the differences in NIL rights between domestic and international student-athletes are unethical and unfair. Subsequently, it is crucial to address such a discriminatory arrangement. The findings of this research study are essential for policymakers and institutions as they attempt to develop policies that promote fairness, equity, and inclusivity for all student-athletes, regardless of their nationality.

Different Yeast Strain Effects on the Sugar Profiles in Finished Beer (Poster Presentation)
Luke T. Ferguson
Faculty Research Mentor: Drew Budner, Department of Chemistry
During the brewing of beer, yeast consumes sugar released from the grain. The use of different yeast strains during the alcohol fermentation process may cause various sugar profiles in the finished beer once fermentation is complete. There has been increase interest in the use of gluten-free grains as a source of fermentable sugars. In this particular study, series of beers brewed from a gluten-free grain, millet were investigated to determine the impact of yeast strain on residual sugar including, maltose, and fructose. The sugar profiles in any given sample of beer were determined following derivatization using 1-phenyl-3-methyl-5-pryrazolone (PMP) then be separated and quantified through High-

Performance-Liquid-Chromatography (HPLC). To analyze the HPLC data a calibration curve will be formed using the created stock solutions, the peak sizes on beer samples will then be related to the curve to find the concentration of glucose, maltose, and fructose present in beer. This research will be important in finding optimal sugar profiles in beer.

Ad Nauseam: Exploring OCD Through Visual Art (Poster Presentation)
Mattie Flading
Faculty Research Mentor: Meghan O'Connor, Department of Visual Arts
I first began researching obsessive-compulsive disorder (OCD) following my diagnosis in 2019. Despite struggling with unexplained symptoms for over a decade, the diagnosis still resulted in internal skepticism. I did not have a lighthearted inclination toward cleaning or symmetry. I never found myself counting in patterns or otherwise enacting other behaviors I had been taught to associate with OCD. Eventual reassurance from specialists regarding the accuracy of my diagnosis prompted me to seek explanations for both my delayed diagnosis and initial ambivalence. Answers appeared in the form of unfortunate stigmas that understate the disorder and perpetuate untruths that prevent individuals like myself from receiving diagnoses. To both address and criticize these stigmas, I created "Ad Nauseam:" an installation sculpture that illustrates the severity of the disorder through plush, silkscreen prints of anthropomorphized animal forms and anarchic configurations. Silkscreen printing is a repetitious system that follows a strict set of sustained procedures that reverberate the cyclical qualities of OCD. Likewise, the sculpture depicts a fox cowering against a swarm of mobbing birds. While birds are traditionally prey animals to foxes, the roles are adulterated to demonstrate the analogous jurisdiction that compulsive behavior maintains over personhood. In addition to confronting the reality of this disorder, working on "Ad Nauseam" allowed for creative research regarding the concurrent use of silkscreen printing and soft-sculpture processes, which are often observed separately.

Ultraviolet to Visible Down Conversion of ZnO2-Eu2+ Nanospheres for Solar Cell Application (Oral Presentation)
Lana Flanigan
Faculty Research Mentors: David Kumi, and Nicholas Harmon, Department of Physics and Engineering Science
Despite the many advantages solar cells have over other renewable energy sources, solar energy efficiency still has major drawbacks such as energy loss that limit their operation and commercialization. One of the main reasons for the energy loss is the ineffective utilization of short wavelength photons, especially within the ultraviolet (UV) region of the sunlight spectrum [1, 2]. Nanophosphors are nanomaterials that emit visible light when agitated, and they have shown potential in converting unusable photon energy into energy that can be used by the solar cell, with up and down conversion [3]. We report on the investigation of down-converting nanophosphors composed of ZnO doped with Eu and Tb. These nanophosphors act to harvest high energy UV photons from the sunlight spectrum and down-covert them to low energy visible photons where they could be conveniently absorbed by solar cell devices and improve their power conversion efficiency. We will discuss the results on scanning electron microscope (SEM) analysis, UV-vis spectroscopy analysis, and photoluminescence techniques used to characterize these down-conversion nanophosphors.

Songs of Zion (Oral Presentation)
Renaissance “Rein” Fraser
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence

Songs of Zion is script for a stage play, potentially a musical, retelling the story of Obsidian Studio's *Honest Hearts* focusing on revising the themes of colonization, revenge, redemption, religion, and self-discovery through inclusive representation of Native American coded characters and cultures. The script aims to tell a new story based on pre-existing characters and settings that not only change the execution of the story's themes, but diversifies the cast in order to resonate more deeply with a larger audience. In the process, the play works to further prove the legitimacy of fan-created works.
The story is about 19-year-old Charlie Tsosie, a Diné scout and aspiring artist living in Zion Valley two hundred years after nuclear war. When a trading caravan takes refuge in his isolationist community, a mysterious figure within the caravan throws local politics into disorder. With his tribe on the brink of war, Charlie must navigate the complex interpersonal relationships of the people around him in order to help his people – and prove himself worthy of leaving Zion to explore the reborn world.

Weight-length relationships for common fish and invertebrate species in Winyah Bay, South Carolina (Poster Presentation)
Catherine A. Friedline
Faculty Research Mentor: Ryan Rezek, Department of Marine Science
Establishing weight-length relationships of aquatic fauna is critical to rapidly assessing the biomass of catch based on length data obtained in the field. These relationships inform fisheries management decisions and support research in coastal systems. Weight-length relationships allow for the calculation of total organism weight caught from length-frequency data, which allows for the analysis of changes in the robustness/health of populations, and aids in determining the relative condition of organisms across size classes. However, many weight-length relationships of estuarine fauna commonly found in the South Atlantic are either unavailable or of limited quality due to low sample size, the data originating from outside the region, or a restricted length range of specimens measured. Some of the most abundant species in the South Atlantic estuaries have not been updated in almost sixty years. Sixteen common fish species and three shrimp species caught in trawls in Winyah Bay throughout 2022-2024 were analyzed, taking the weight and standard length. Our research provides information on two species that have never been studied before, eight species of fish have higher sample size than previously reported, and weight-length relationships for eleven species have higher R2 values than previous studies. Four species studied have not been evaluated in over twenty years, and seven additional species have not been updated in over forty years. This study provides the first data of its kind for seven species in the South Atlantic region.

Effects of Environmental Parameters on Populations of Mud Crabs (*Panopeus spp*.) and Blue Crabs (*Callinectes sapidus*) in South Carolina (Poster Presentation)
Jamie A. George
Faculty Research Mentor: Eric Rosch, Department of Marine Science
Dynamic estuarine systems and their inhabitants are vulnerable to abiotic environmental changes that result from global climate change trends. This study aims to observe how the abiotic parameters of water temperature, salinity, dissolved oxygen, pressure, and conductivity affect the population density and morphology of mud crabs (*Panopeus spp*.) and blue crabs (*Callinectes sapidus*) over time. Carapace width of and sex ratios of both species will be measured in reference to abiotic variables. Population density was assessed via randomized quadrat sampling for *Panopeus* and estimated using catch per unit effort (CPUE) of baited crab traps for *Callinectes sapidus*.

Fiddler Crab Gut Microbiomes as an Indicator for Eutrophication due to Waste-water Contamination in Estuaries (Oral Presentation)

Madison L. Geraci
Faculty Research Mentors: Eric Rosch, and Angelos Hannides, Department of Marine Science
Estuaries are unique biogeochemical zones in coastal systems that provide a myriad of ecological functions: providing habitat for critically important fishery species, diverse species of plants and animals, and contributing to nutrient cycling. Estuaries are vulnerable to anthropogenic stressors as they are intersections between marine and terrestrial communities and are often the hotspots of coastal development and activity. Estuarine sediments act as repositories for anthropogenic contaminants, including excess nutrient runoffs and waste-water pollution that can cause states of eutrophication. Microorganisms are sensitive to these environmental changes, presenting a unique opportunity to be useful bioindicators of environmental stress. Isolating microorganisms from marine environments presents a unique challenge and is often done using expensive and time-consuming sequencing analyses. However, the gut microbiome of surface-feeding detritivores, such as fiddler crabs, may serve as a more effective way to assess environmental microbe speciation. We compared two estuaries in South Carolina including Dunn Sound in Waties Island and Murrells Inlet in Garden City to compare the effects of excess nutrients on microbial composition and function. Using a combination of environmental chemical data and microbial data over discrete temporal ranges we identified changes in nutrient input and the associated changes in microbial diversity and ecological services.

A Test of the RBI Account of Verbal Overshadowing: Description Accuracy × Identification Delay on Eyewitness Identification Performance (Oral Presentation)
Kali Goldman
Faculty Research Mentor: Melissa Baker, Department of Psychology
Verbal overshadowing occurs when recall of a previously seen face interferes with subsequent recognition of that face. The retrieval-based interference (RBI) account of verbal overshadowing theorizes that 1) the accuracy of the description provided during recall relates to recognition accuracy of that face and 2) recognition performance of the face improves as time passes between the recall and recognition tasks. The present research tested these two hypotheses of the RBI account. Participants watched a burglary video, were provided with a description of the suspect, and identified the burglar from a lineup. The description of the suspect varied between participants: participants were given a correct description of the suspect, an incorrect description, or no description at all (control). The amount of time between the recall and recognition tasks also varied between participants: participants were engaged in the identification task immediately after the recall task or after a 20 min delay. Results revealed an effect of description of suspect on identification accuracy. Participants who received the accurate description of the suspect were less likely to make a correct identification decision (false alarm rate=66.7%), compared to participants in the no description control (22.2%) and inaccurate description conditions (11.1%). Participants who received the accurate description of the suspect had poorer memory strength (d'=0.78) and more liberal response criteria (C=-0.21) compared to participants in the no description control (d'=1.40, C=0.39) and inaccurate description conditions (d'=1.42, C=0.67). Results revealed no effect of delay on identification responses. Implications will be discussed during the presentation.

Applied Machine Learning for Surrogate Modeling: A Spatio-Temporal Approach (Oral Presentation)
W. Drew Graham
Faculty Research Mentors: William M. Jones, Department of Computing Sciences; Nathan A. DeBardeleben, Sharmistha Chakrabarti, and Vanessa Job, Los Alamos National Laboratory
One recent trend in machine learning (ML) is its application to surrogate modeling for computationally expensive direct numerical simulations. The general approach is to train a ML model using data obtained from the field or via extensive prior simulation. While training an ML model can be expensive, it

traditionally is only performed once and can then be used to speedup the overall time to solution using the model in inference/prediction mode. In this work, we apply a sophisticated ML model that has both spatial and temporal capabilities to aid in solving a two-dimensional heat transfer finite difference problem that serves as a proxy application for our external funding sponsor, Los Alamos National Laboratory (LANL). In this presentation, we will cover the physics problem to be solved, the machine learning techniques applied, the general workflow and parallel execution environment as well as the promising predictive results we have obtained during this study. We will end with a summary of future work to be completed using these techniques for inverse problem calculations during the summer of 2024 at LANL as part of a summer undergraduate research internship.

Factors That Predict Emigration of Female Loggerhead Shrikes in Urban Horry County, SC (Oral Presentation)
Delaney S Griffin
Faculty Research Mentor: Chris Hill, Department of Biology
Reproductive success plays a primary role in the survival of a population. Birds specifically, often have a short breeding window and therefore their response to nest failure is crucial. Nesting success or failure may predict whether a breeding female decides to re-nest in the same location or emigrate to a new territory. Horry County, located in coastal South Carolina, hosts an urban population of non-migratory Loggerhead Shrikes, a species that has seen a historic decline. It is known that this urban population experiences a high rate of female departures, however, the reasons for this trend are not clear. For that reason, my study analyzes the population and reproductive data of the Horry County urban Shrike population collected from 2019 to 2023. I used nest fate, age of the female, study area tenure, and the status of her mate for each breeding season to determine what factors predict emigration by female shrikes. Identifying factors that lead to departures may help broaden the scope of conservation efforts and slow the decline of the population.

Lack of Environmental Education is Harming Horry County, What Do We Do? (Poster Presentation)
Paiton Hagen
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
Climate change is an issue that affects everyone whether they are aware of it or not. However, some communities are hit harder by the negative impacts and are not given adequate resources to aid them. This project will take a look at various cities throughout Horry County in South Carolina where low-income levels and lack of environmental education correlate with high environmental destruction. Through photojournalism, personal interviews, and statistical data analysis, compelling information will be shared that highlights specifically how this lack of environmental education is negatively affecting the community. Additionally, this project will include a proposal of how educational programs that focus on ecological issues can be introduced and sustained in classrooms throughout Horry County. The most effective way to implement these lesson plans and programs was researched by comparing similar programs in other educational settings. By emphasizing the environmental issues that are harming communities where poverty rates are higher, and advocating for different environmental educational opportunities, Horry County will be on course for reaching world-wide achievement of the 17 UN Sustainable Development Goals by 2030 and become an environment filled with empowered youth who are driven to create change.

I Thought We Were All God's Children (Poster Presentation)
Ke'yani J Hampton
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence

I see God every day down here in South Carolina. I see him in the signs plastered with the F slur next to printed-out bible verses during June. In the two people burning a cross simultaneously yelling racial slurs in their black neighbor's yard. On the back of pickup trucks that flip me off, dangling cigarettes above their Jesus is King stickers. When I pass the billboards that scream 'Go to church devil worshiper'. Those people lost their way, some say, that's not God. How's that different from priests preaching about the God who kicks you down to test your faith? Or devotees who threaten you with Hell for not believing despite being a good person? Or the church that tells everyone we will die in the rapture? Religion is a weapon, a scare tactic. In order to analyze the control religion has on society & how that impacts individuals mentally, I designed a board game. In this game, you roll dice to move across the board. Each space you land on represents a milestone in life, good or bad. Some spaces will prompt you to pick a card that moves you forwards or backwards. The goal is to make it to Heaven, the last space on the board and it's harder than you think. This mimics the list of terms and conditions people scourge through to feel worthy enough for God. It encourages the player to acknowledge the emotional turmoil that comes with the game & compare it to their journey.

Cyanobacterial HAB genera in five stormwater retention ponds of northeastern SC: Time trends in abundance and relationship to water quality measures of eutrophication (Oral Presentation)

Kathryn I Hanson

Faculty Research Mentors: Susan Libes, Department of Marine Science and Victoria Green

The accumulation of polluted runoff in retention ponds can create water quality conditions that favor development of harmful algae blooms, including toxin-producing cyanobacteria. This can present a health risk to pedestrians and nearby residents, as many such ponds are surrounded by walkways or housing complexes. Blooms can also cause harm to natural ecosystems, periodically causing hypoxic conditions and toxin buildups. This study aims to form a more complete understanding of the population dynamics of certain potentially harmful phytoplankton genera, in relation to water quality parameters in retention ponds. Sampling was performed in five ponds chosen to reflect a variety of adjacent land uses. Eleven sets of samples were collected every other week for a period of six months. Cell abundance was quantified for five common and potentially harmful phytoplankton genera, which were chosen due to their prevalence in harmful algal blooms and potential for toxin production. Time trends in genera diversity and abundance were compared to water quality data to investigate relationships. A bloom event was captured at one location, and additional samples and data were taken over the course of the bloom to generate a more comprehensive data set.

Exclusionary Discipline: How does it impact students? (Poster Presentation)

Hunter A Hardee

Faculty Research Mentor: Suzanne Horn, Department of Education

This presentation will look at the current levels of exclusionary discipline and what that means for students. We will examine how the data has been recorded over the past 4 years from before and after COVID-19. Our data lead us to many unanswered questions. Data during the Trump Administration and the Biden Administration is being reported differently than in the Obama Administration. Federal data, and required state data, no longer show how many students of different races, genders, and ethnic minorities are being suspended, expelled, or truant from South Carolina school districts for all causes. Students instead are reported by grade level and only include suspensions for violent infractions. There is a separate truancy report. The data from different reputable sources are inconsistent with each other.

The new system of reporting is vague as all suspensions do not need to be reported (EG dress code, disrespecting a teacher, etc.) The SC State Department of Education does disclose all required data. However, what is being reported has changed. We are certain that districts are still tracking all the reasons students are suspended for their discipline records. However, this information is confidential now that it is not required to be reported out. The future approach to this project will be to examine graduation rates, which are reported by sub-groups, and truancy reports.

Acute Changes in Range of Motion and Vertical Jump Performance as a Result of Foam Rolling with and without Vibration (Poster Presentation)

Lawton Hawkins

Faculty Research Mentor: Jason Smith, Department of Kinesiology

Foam rolling is a popular tool used by clinicians and the general population to improve range of motion, facilitate recovery, and to manage pain levels. More recently, foam rolling with vibration has gained popularity with the same goals as foam rolling. Studies comparing the effects of foam rolling and foam rolling with vibration in terms of acute changes in range of motion and performance have reported mixed results. However, the majority of these studies have used vibration frequencies between 30 and 50 Hz. Vibration applied directly to the tendon can elicit peak firing rates from the primary endings of muscles spindles at slightly higher rates (~63 Hz) when using vibration frequencies ranging from 20 Hz to 120 Hz. This suggests that using a vibration frequency higher than what has typically been used in previous studies may elicit a positive response by evoking a vibration tonic reflex. To date, only one study has used a foam rolling vibration frequency less than 30 Hz (28 Hz). This study reported an increase in peak flexion torque. Therefore, changes in range of motion and/or performance induced by foam rolling with vibration may be dependent upon the frequency of vibration. Therefore, the purpose of this study is to compare foam rolling with no vibration to foam rolling with vibration at different frequencies (15 Hz, 45 Hz, and 60 Hz) in terms of range of motion and vertical jump performance.

How Odor and Political Stance Affect Views on Immigration and Refugees (Oral Presentation)

Genesis Hernandez

Faculty Research Mentor: Terry Pettijohn, Department of Psychology

The current study examined how odor and political stance affect views on immigration and refugees. Participants comprise of Coastal Carolina undergraduate students. A positive and negative affect schedule, demographics questionnaire (where they were asked about their political stance and to what degree), immigration attitudes test, prejudice against asylum seekers scale, and a questionnaire about a fictive group of immigrants was completed. A scenario about a fictive group of immigrants from a fictive state in Mexico was presented to the reader. They were then asked about their thoughts on said group (e.g. how similar they thought the group was to United States citizens, if they would negatively affect the U.S.). Three different versions of the odor independent variable were given as a between-subjects variable-foul (fart spray), control (no spray), and sweet (cinnamon spray). Previous studies have shown that a foul smell can cause one to have more negative or a change of attitudes on a multitude of things, such as photos or condom use. Other research has shown that Republicans typically have more strict views on immigration compared to Democrats. It is hypothesized that the foul odor will cause participants to have a more negative outlook on immigrants and refugees, and that the sweet spray will have the opposite effect. It is also hypothesized that those who associate with the Republican party will have more negative attitudes toward immigration as opposed to those who associate with Democratic party, who will say the opposite.

The Relationship between Gender, Loyalty, and Views toward Pornography (Poster Presentation)

Genesis Hernandez

Faculty Research Mentor: Melissa Baker, Department of Psychology

The current study examined the relationship between college students' moral character and their views of pornography as both a moral and legal issue. Specifically, the main aim of the study was to examine if loyalty-a sub facet of moral character-mediated the relationship between participant gender and their views toward pornography as both a moral and legal issue. Participants (N=85; 69% female, 30% male) were comprised of a college sample. First, participants completed the Moral Character Questionnaire (MCQ) which assessed their morality anchored to 7 factors: global morality, honesty, compassion, fairness, loyalty, purity, and respect. Next, participants answered questions regarding whether they believed pornography was a moral and legal issue. Data collection is on-going and results reported herein are preliminary. Regarding participant's view of pornography is a moral issue, preliminary results revealed that the relationship between participant gender and their views toward pornography was mediated by their loyalty scores. Regarding participants' views of pornography as a legal issue, results did not reveal a mediating effect, however, participant gender was related to their views toward pornography. Findings have important implications for how men and women regard pornography and suggest that their views toward pornography as a moral issue might be linked to loyalty.

Structural Coercion Does Not Prevent Autonomy nor Informed Consent (Oral Presentation)

Hannah M. Herness

Faculty Research Mentor: Emily McGill, Department of Philosophy and Religious Studies

Structural coercion is defined as societal pressures which coerce a patient into a (medical) decision they might not have made otherwise (Fischer 360). Some feminists claim that women are unable to give informed consent to in vitro fertilization due to structural coercion and the social pressure to be mothers (Warren, 46). This is because coercion is thought to undermine patient autonomy, a key component of informed consent. The position argued in this presentation is that structural coercion does not have this ability. Two main premises are given to support this conclusion. The first is that structural coercion does not prevent autonomy because people can still make self-determining decisions when coerced by society. Evidence for this premise is that humans make autonomous decisions despite structural coercion regularly, and that structural coercion can only make options seem better or worse—not eliminate them (Fowler 329). The second premise is that viewing women as non-autonomous beings would have negative consequences, including contributing to medical sexism. Since we are constantly influenced by structural coercion, the claim that it can take a person's autonomy away would mean autonomy doesn't truly exist. This would yield the consequence of never truly having informed consent, which is impractical in the medical field.

Betaine Supplementation Does Not Significantly Impact Exercise Performance in the Heat (Poster Presentation)

Jake J. Heydon

Faculty Research Mentor: Brandon D. Willingham, Department of Kinesiology

Background: Prolonged exercise in heat elevates the risk of heat-related illnesses and diminishes performance. Betaine (BET) has shown promise as an osmoprotectant in animals experiencing heat stress, but human studies are limited.

Purpose: To investigate the effects of preloaded BET supplementation on endurance-trained men subjected to active heat stress.

Methods: Eight endurance-trained men (Age: 26.4±6.8 years; VO2peak: 55±4.8 ml·kg-1·min-1) underwent a double-blind, randomized, crossover study consuming BET (50 mg·kg-1, twice per day) or placebo (PLA) for 7 days. The experimental condition consisted of cycling at 70% VO2peak for 60 min in

the heat (33°C, 35% RH), followed by a supramaximal sprint to exhaustion (130% peak power output). Measures of gas exchange (VO2, VCO2, and RER), RPE, and blood lactate were assessed across time via repeated measures analysis of variance. Paired-sample T-tests were used to determine differences in sprint performance time to exhaustion.

Effect of Downregulating Lactate Dehydrogenase (LDH) in Alzheimer's Disease using a Drosophila Model (Poster Presentation)
Hannah Higgins
Faculty Research Mentor: Fang Ju Lin, Department of Biology
According to the CDC, approximately 5.8 million Americans suffered from Alzheimer's (AD) in 2020. AD is characterized by progressive memory loss and typically develops after the age of 60. There are many studies that suggest different causes of Alzheimer's such as oxidative damage, amyloid plaque buildup, and metabolic dysfunction. Lactate Dehydrogenase (LDH) is an enzyme that is found in many tissues within the body and functions within cellular metabolism. The enzyme has two forms, LDH A and LDH B, which catalyze the reversible reaction that converts lactate to pyruvate coupled with the reduction of NAD+ to NADH. Pyruvate is then used in the Krebs cycle to create ATP. In a study conducted by the University of Western Ontario, it was observed that Alzheimer's patients showed an increase in LDH gene expression and enzymatic activity. With this knowledge, the contents of this research use fruit flies implanted with human Alzheimer's (Drosophila melanogaster) to observe the effects of LDH RNAi. To further model the disease, the flies were crossed with a strain that carried human Aβ42. To measure the effects of the LDH RNAi the lifespan of the flies and their locomotor function were monitored. It was shown that downregulating RNAi with LDH inhibitors increased the life span of the flies as well as their locomotor function.

Synthesis of Phenyl Containing Phidianidine Analogs (Poster Presentation)
Hannah Higgins
Faculty Research Mentor: Bryan Wakefield, Department of Chemistry
Phidianidine is isolated from the marine opisthobranch mollusk *Phidiana militaris* and is the first natural product known to contain a 1,2,4-oxidazole ring. Phidianidine possesses several biological functions, such as its ability to bind to u-opioid receptors and dopamine transporters. Inhibition of these targets may enable the molecule to treat central nervous system diseases. With this knowledge, other researchers synthesized analogs that replaced the alkyl chain of the molecule with a biaryl group. Some of these analogs were shown to protect against oxidative damage, which is implicated in the development and progression of Alzheimer's Disease. Based on the biaryl analog, a synthesis was devised to synthesize analogs with variation in the 1,2,4-oxidiazole ring and indole which have not yet been reported. This report focuses on the synthesis of a phidianidine analog that replaced the 1,2,4-oxidizole ring with a benzene ring. The goal is for the newly synthesized analogs to further protect against oxidative damage. The two routes devised to create the analogs were successfully verified via NMR spectroscopy. The Fisher Indole approach was low yielding and resulted in complex mixtures. The acid catalyzed Friedel-craft reaction provided better results with the furan analog, and we plan to optimize it with the phenyl containing phidianidine analog. Once the analogs are synthesized in higher yields, the compounds will be subjected to biological testing to determine their activity.

The Responsibility of Learning (Oral Presentation)
Taylor Houston
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
Learning takes place throughout our lives. From when we are young, we take in the world around us and

are led by our curiosity; Piecing together the world one block at a time. There was a time when those who are the best in their discipline, had to learn the fundamentals. And with that someone had to teach them.
In the University setting, this takes place more formally. Flash cards and the Pomodoro method are seen as viable ways of retaining knowledge. Students are encouraged to take responsibility for their learning and deadlines may seemingly compromise this process.
However, the spotlight can be shifted on the educator. A question that can be asked: Is where does the responsibility of educational success rely on: the professor or student. The purpose of this study is to explore the qualities and characteristics of educators and how they affect student outcomes. With conducting this research, individuals may be able pinpoint specific qualities that make themselves a great educator whether you're teaching a class full of students or helping someone find their email inbox.

Liquids: The Dry Edition (Oral Presentation)
Rachel Jeric
Faculty Research Mentor: Ronald Green, Department of Philosophy and Religion
The American school system allows for individuals to obtain the necessary critical thinking and problem-solving skills that will aid students both academically and socially. A large component of school is the ability to communicate effectively in order to understand and explain concepts. A key component of verbal communication is language and in turn, phonation. Phonation varies as a result of articulation and language. Despite this, the phonological aspect of teaching is not heavily focused upon in schools. There are many sounds such as /ɹ/ that cause much difficulty when it comes to pronunciation. Especially in other languages such as Japanese. Japanese contrasts from the English language mechanically, phonetically, and linguistically. With /ɹ/ being one of the hardest sounds to produce, this study aims to investigate the acquisition of the alveolar retroflex liquid, /ɹ/, among students of Japanese descent. In order to establish the means of the students obtaining the liquid, an analysis consisting of three factors was conducted. These factors were the linguistic studies of the Japanese and English languages, personal accounts of students of Japanese descent, and English as a second language programs. The results of the analysis lead to concepts of better obtaining the liquid, reinforcing the importance of pronunciation in schools and programs, and improving communication and understanding among students and educators.

Taking Back Herstory: The Women that Shaped Music (Poster Presentation)
Alondra S Johnson
Faculty Research Mentors: Eric Schultz, and Edurne Beltran de Heredia Carmona, Department of Language and Intercultural Studies
There are many songs that are believed to have been written by men in the music industry, but in truth, they have been written by women who pioneered the way many of us see music today. Accordingly, this project will focus on exploring the songs we believe were written by men. My project, "Taking Back Herstory," compares selected stories to the laws of copyright in an effort to demonstrate that the music researched belongs to the women who created it, not to the frame that resulted from their male counterparts' efforts by saying it was theirs. The laws governing copyright are designed to protect the original creator of a work of art, in this case music, from being copied or used in another work without permission. However, there are some loopholes within copyright law. For example, we know the tune "When the Levee Breaks," by Led Zeppelin; this song was actually written by Memphis Minnie who wrote the song about the 1927 Great Mississippi Flood. According to the 1909 copyright laws the writer is not necessarily the author and therefore the owner of the copyright. Led Zeppelin excluded Minnie

from any copyright since she did not "compose" the reimagined version of the song and did not receive any royalty ownership for a song she wrote. The song we know it as Led Zeppelin, when in fact the song was created by Memphis Minnie. This is one of the many stories I will be researching and taking back her story into music.

The People's Mujahideen of Iran (MEK): Dissidents, Terrorists, or CIA Assets (Oral Presentation)
Molly Jones and Hannah Albert
Faculty Research Mentor: Joseph Fitsanakis, Department of Intelligence and Security Studies
The People's Mujahideen of Iran (MEK) is a mysterious and controversial Iranian oppositional group that has operated since the mid-1960s. It claims to provide a peaceful, democratic, and feminist alternative to the current government of the Islamic Republic of Iran. Since its establishment, the MEK has assassinated Iranian and United States (U.S.) government officials and participated in nearly every major regional dispute, including the 1979 U.S. embassy hostage crisis and the Iran-Iraq war of the 1980s, which killed nearly a million people. In 1997, the U.S. designated the MEK as a Foreign Terrorist Organization. In more recent years, however, the U.S. and some of its allies, including Israel and Saudi Arabia, have supported and protected the MEK and its thousands of members around the world, allegedly because of its fervent opposition to the current Iranian government. This unusual relationship between the U.S. and the MEK offers intriguing insights into key U.S. foreign policy decisions on Iran, a leading energy producer that seeks to expand its nuclear program and falls just behind China and Russia in the U.S. Annual Threat Assessment. Our research assesses the extent of the MEK's intelligence and operational capabilities and examines claims that the MEK's may have helped the U.S. Central Intelligence Agency and Israel's Mossad assassinate Iranian nuclear scientists inside Iran. Our research also assesses the MEK's role in the spiraling discord between Iran, Israel, and the United States, in the context of the ongoing war between Israel and Hamas.

Self-Care Scale Development: Emerging themes from the Front Lines (Poster Presentation)
Grace M. Keaveney
Faculty Research Mentors: Kerry Schwanz, and Melissa Paiva-Salisbury, Department of Psychology, Plymouth State University
Our goal is to create the Self-Care Behaviors and Beliefs Scale (SCBBS), a tool for measuring individuals' levels of self-care. One step in the process of developing this instrument was to recruit participants and collect information to create the pilot version of the scale. Qualitative data were collected through focus groups and interviews with 27 total individuals who are helping professionals. These interviews and focus groups touched on important topics of the professionals' feelings, beliefs, and attitudes towards compassion fatigue, burnout, and self-care methods. The interviews were recorded and transcribed. The transcriptions were coded by two researchers, and we are currently in the data analysis phase. We expect to find the following themes will emerge from our data: 1. Self-care will be defined as taking the time to care for yourself and prioritizing taking care of your own needs. 2. Self-care is comprehensive and includes all aspects of one's health. 3. Participants will report feeling deserving of self-care and that it's necessary for their wellbeing. 4. While engaging in self-care participants may feel happy, peaceful, and relieved, but also worried, anxious, and guilty. 5. After engaging in self-care, participants may feel happy, peaceful, and recharged. 6. Some barriers to performing self-care may be overcommitment, having too much work to do, and neglect of basic needs due to work. 7. Finally, some of the popular self-care activities reported by helping professionals will be described. Implications for assessing self-care as a key component for prevention of compassion fatigue will be discussed.

The Effect of Chewing Gum on Academic Performance and Mood (Poster Presentation)

Grace M. Keaveney

Faculty Research Mentor: Terry F. Pettijohn, Department of Psychology

The present study explores the effect that chewing gum has on measures of academic performance and self-reported mood, to determine if gum chewers may benefit from their behaviors. Prior chewing gum studies elicited mixed results in measuring these same factors. There were 53 total participants in the current study, of which were randomly assigned to one of three of the following conditions: non-gum chewing (n = 15), spearmint gum chewing (n = 19), or bubblegum chewing (n = 19). It was predicted that participants who chew spearmint gum will earn more questions correctly on an academic content-based quiz, have the fastest completion time, and report more positive moods when completing the Positive and Negative Affect Schedule (PANAS), as compared to participants chewing bubblegum and a control group of participants not chewing gum. Four, one-way ANOVAs were conducted for each of the dependent variables, as well as a correlation coefficient, and each found non-significant results. It is necessary for additional studies to be organized to further investigate the potential for academic benefits via chewing gum or spearmint flavoring.

African American Struggles in the LGBTQ+ Community (Oral Presentation)

Akiyle K. Kilgore

Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence

Growing up, I was able to watch the world grow and become comfortable with others, and different lives they lead. I began to see more representation from people who seem to have gone through the same thing I did growing up, but they actually had it easier because of their ethnicity. Yes, its true that everyone has their own story when it comes to being different from others such as LGTBQ+ members who constantly face aggression and disrespect from others who deem them abnormal. My topic, African American Struggles in the LGBTQ+ Community, will focus on the minimal representation African Americans have when it comes to anything remotely connected to the community. Based on personal experience, and experiences that have been shared with me in confidence, the story of a black boy growing up gay is always a difficult trial. It makes you feel alone, terrified, and desperate for an outlet that understands them. Due to the lack of representation or assistance in anyway, African Americans are more likely to take their life or find an unhealthy habit to deal with the pain rather than Caucasian LGBTQ+ youth. More representation of African Americans from the community is just a small step towards making them feel more okay in themselves, but even the small steps could potentially save lives. Especially when they know that there are more people out there like them, and being who they are doesn't make them weird or indifferent.

The Effect of Flowers and Meditation on Student Affect and Altruism (Oral Presentation)

Taryn Killmayer

Faculty Research Mentor: Terry Pettijohn, Department of Psychology

The effect of mindfulness meditation and the power of nature on the human psyche is a phenomenon that has been studied through time and populations. There has been promising evidence indicating that both meditation and nature have a positive impact on people's mood and emotions. However, some studies surrounding the western student population are contradictory or show less of an effect than to be expected. The goal of the study is to research this topic within the Coastal Carolina undergraduate student population. Students participating in the study will be either participating in a five minute guided meditation video, or sitting in a room quietly for five minutes. Additionally, there will either be four flower pots of pansies, or no flowers in the room. After the five minutes, participants will answer a series of questionnaires. I will be measuring the state of their mood, stress and anxiety levels, as well as how likely they are to participate in prosocial behaviors. Findings will indicate whether meditation

and/or nature has the potential to improve people's overall mental health and probability of helping others in need, both of which are important in a healthy and functional society.

The Cryptic Creatures: Determining Habitat Occupancy of Pine Snakes (*Pituophis melanoleucus*) using environmental DNA (Oral Presentation)
Peyton G. Kinavey
Faculty Research Mentors: Michelle M. Barthet and Scott L. Parker, Department of Biology
The Pine Snake (*Pituophis melanoleucus*), is listed in the South Carolina Wildlife Action Plan as a "species of greatest conservation need" but little is known about their current abundance and distribution within SC due to their low population density and secretive lifestyle. Commonly used presence/ absence survey methods such as drift-fence trap arrays may fail to reliably detect Pine Snakes even when they are present in a given habitat. We developed novel primers to detect Pine Snakes using environmental DNA (eDNA) in an effort to increase the efficacy of detecting these snakes in critical habitats. eDNA is becoming increasingly used to aid traditional ecological survey techniques for identification of rare and endangered species. *Pituophis*-specific primer pairs targeting the NADH dehydrogenase subunit 4 (ND4) gene were developed and assayed for specificity and sensitivity in laboratory and environmental application. Specificity tests confirmed selective amplification of *Pituophis* versus conspecifics using skin and tissue samples. Sensitivity assays resulted in a Limit of Detection threshold of 25 ng of tissue or skin DNA. eDNA samples were collected from three ~200 hectare sectors within a study site on the South Carolina Coastal Plain containing a known Pine Snake population, to test the effectiveness of primers in detecting Pine Snake presence and distribution. Our results may enhance Pine Snake conservation planning by providing an efficient, non-invasive tool to assist in detecting presence of Pine Snake populations statewide.

Sun Protection Behaviors, Health Beliefs, Attitudes, and Norms Among College Students (Poster Presentation)
Madison A. Klump
Faculty Research Mentor: Michael S. Dunn, Department of Public Health
Purpose: This study sought to assess the relationship between attitudes, health beliefs, and societal norms of sun protective behaviors among college students. Methods: Students (n=224) volunteered to participate in an electronic survey through the permission of instructors of an introductory public health class. Results: Those who felt susceptible to skin cancer were more likely to use sunscreen, perform skin checks on themselves, and avoid suntanning. Those who felt there were no barriers for use of sunscreen were more likely to use sunscreen and reapply sunscreen. Those who felt sun tanning was a societal norm were less likely to reapply sunscreen, utilize shade when available, and lay out in the sun. Conclusions: Interventions focused on decreasing sun exposure should keep in mind the influence perceived susceptibility, societal norms, and self-efficacy have on those engaging in sun protective behaviors. Interventions that use the framework of the Health Belief Model might be more effective if the interventions focus on increasing perceived susceptibility and self-efficacy and bringing awareness and educating to combat the societal norms of suntanning.

Bacteriophages, and their Place in Biomedical Applications (Poster Presentation)
Michael Knight
Faculty Research Mentor: Daniel Williams, Department of Biology
A bacteriophage, also known as a "phage," is a virus that infects a bacterial cell and uses that cell's inner machinery to replicate and spread. A phage is genetically programmed to seek out its target host.

Growing prevalence of antibiotic resistant bacteria has increased overall interest in bacteriophages and their potential use in biomedical applications. Because of this, the understanding of phage genomes has become increasingly important. SEA-PHAGES (Science Education Alliance- Phage Hunters Advancing Genomics and Evolutionary Science) is comprised of a conglomeration of universities working together towards a common goal of advancing knowledge of phage genomics. SEA-PHAGES provides undergraduate students with the opportunity to conduct research, discover new phages, and annotate their genomes to increase overall interest in biomedical sciences. EmyBug, Stargaze, and Bellis are three phages discovered on campus at Coastal Carolina University. In BIOL 303 – Phage Bioinformatics we are using bioinformatics tools to annotate the genomes of these three phages. This research is being used to build a global database of phages with a goal of creating better understanding for practical applications such as viral therapy.

The Analysis and Annotation of the Temperate Bacteriophage EmyBug (Poster Presentation)
Brannon LaFrancis
Faculty Research Mentor: Daniel Williams, Department of Biology
With the growing interest in bacteriophage therapy as a solution to antibiotic resistance, a unique issue arises. Temperate phage genomes do not cleanly excise themselves from the bacterial genome, which may lead to the transduction of pathogenic genes. Due to the nature of this, only non-temperate phages are ideal for use in phage therapy. I found EmyBug in the 2023 Fall semester during Phage Discovery, from a soil sample obtained off campus. Throughout the semester, I characterized EmyBug and also obtained lysogens, which indicated it was a temperate phage. In subsequent sequencing and annotation, it was found that EmyBug lacks an obvious integrase, which is required for integration into the bacterial genome. Using comparative genomics, we found a unique partitioning protein cassette in EmyBug's genome, limited to a small portion of temperate phages. Further annotation and comparison led to the discovery that phages with this cassette, replicate extrachromosomally instead of integrating, unlike other temperate phages. From this, we introduce the possibility that temperate phages are a model organism for gene transfer and bacterial pathogenicity.

The Effect of Room Lighting Brightness and Song Tempo on Mood and Song Preference in College Students (Oral Presentation)
Madison Christine Leusner
Faculty Research Mentor: Terry F. Pettijohn, Department of Psychology
This research explores the impact of song tempo and light brightness on various aspects of human experiences. Drawing connections with existing literature, the study aligns with Lwanaga's (1995) findings that participants preferred a tempo similar to their heart rate, reinforcing the shared focus on understanding how music elements, particularly tempo, interact with physiological responses and subjective experiences. The central hypothesis of this study is the interaction between different combinations of fast, normal, and slow song tempos with dim and bright light conditions significantly influences mood (positive and negative), heart rate, enjoyment of the song, comfort levels, and stress perception. Implementing a 3x2 Factorial Design, considering song tempo and light brightness as independent variables, the study comprises six conditions representing all possible combinations. Participants from a diverse sample of college students from Coastal Carolina University will be randomly assigned to one of the six conditions. The research design utilizes an instrumental song, "Take a Moment to Breath. (Instrumental)," played through the MagicBox Bluetooth Speaker from the Coastal Carolina Psychology Department Lab. The lighting setup in room 214A allows for brightness adjustment. Heart rates will be measured using a pulse oximeter before and after stimuli exposure. The survey component includes administering the PANAS scale to assess mood, gathering demographic information, and

soliciting participant feedback on enjoyment, comfort, perceived stress, and subjective ratings of speed and light. The study aims to provide comprehensive insights into the intricate relationship between auditory and visual stimuli on various human perception and response aspects.

The Effects of Limb Occlusion During High Intensity Intermittent Exercise (HIIE) (Poster Presentation)
Sela Lomascolo
Faculty Research Mentor: Timothy Rotarius, Department of Kinesiology
Much of what is known about V̇O2 kinetics and the VO2SC has been gained using either a constant load exercise test, that has an abrupt on- and off-transition, or from incremental exercise protocols where the exercise work rate is progressively increased at a constant rate to volitional exhaustion. Previous research has indicated that the introduction of short, 3-second bouts of low-intensity exercise during otherwise constant high-intensity exercise alters the V̇O2p response and the magnitude of the V̇O2SC. These brief transitions from high- to low-intensity exercise may also impact muscle deoxygenation and energy system contributions. By occluding blood flow to the working musculature during alternating rest periods and heavy-intensity bouts of exercise, we may be able to modulate the metabolic environment by having the body rely more heavily on anaerobic metabolism to satisfy the increasing ATP demand, potentially leading to earlier onset of fatigue. By deepening our understanding of V̇O2 kinetics and the mechanisms of the V̇O2SC, we seek to elucidate the impact of intermittent bouts of heavy-intensity aerobic exercise and the introduction of blood flow occlusion/restriction on V̇O2p kinetics and the V̇O2SC and gain insight into the determinants of exercise (in)tolerance in both patient and healthy populations. Subjects will complete 6 minutes of heavy-intensity cycling under three separate conditions, continuous (CONT), intermittent (INT) and intermittent with limb occlusion (INT-LO). Each condition will be completed twice and ensemble-averaged. It is hypothesized that the addition of limb occlusion to heavy-intensity interval exercise will result in a significant V̇O2SC, similar to CONT.

Religion and Revolution: How Religion Determined Loyalty in the American Revolution (Oral Presentation)
Dustin Sayer Markey
Faculty Research Mentor: John Navin, Department of History
In historical discussions of the American War of Independence, one often-forgotten factor was the role religion played in the buildup to, the events within, and the aftermath of the American Revolution. The American colonies contained diverse religious denominations, including Catholics, Anglicans, Puritans, Quakers, Baptists, Methodists, and others. How did this religious diversity impact the relations between Britain and the colonies? This paper argues that denominational landscape of the colonies, which was largely composed of dissident groups, contributed to the colonies' struggle with Britain, as many prominent groups were opposed to traditional religious hierarchy infringing on their individual rights. Many Anglicans, for example, were Loyalists, while groups such as the Puritans were more inclined to join the patriot causes. This paper argues that post-Revolutionary America was largely shaped by Puritans and other dissenters and the result was a nation rooted in freedom of conscience.

The Higher Education Experiences of Children of Immigrants: The Barriers They Face (Oral Presentation)
Karolina Ysabel Martinez
Faculty Research Mentor: Danny Malone, Department of Sociology
Immigrants and their families are integrating into the US at a fast pace and the population of children of immigrants are climbing rapidly in numbers. These children go through the K-12 school system in the US and if they graduate highschool, they then enter into the collegiate world. This process can be difficult for any number of reasons from immigration status, socio economic issues, language barriers, and lack

of “college knowledge.” These issues are all a part of the college experiences of those who attend college as a child of an immigrant which is the main focus of this research project. Through a qualitative study of surveying and then following with in depth interviews of immigrants/children of immigrants on their experiences in college, the research question that will be attempted to answer is, what are the main barriers that immigrants and children of immigrants face when attending college? Another goal of this study is to contribute to the knowledge that will hopefully go towards creating a system where being an immigrant or a child of an immigrant is not a barrier to getting into college and creating difficulties while in college.

Non-invasively Measuring Skeletal Muscle Mitochondrial Capacity with Blood Flow Restriction (Poster Presentation)

Cassidy M. Mason

Faculty Research Mentor: Justin P. Guilkey, Department of Kinesiology

This study will measure mitochondria content in skeletal muscle noninvasively during low-load and heavy-load resistance exercise with BFR. Healthy males and females (18-25 yrs) will complete a 1RM prediction test and based on the results we will determine the load for the following two sessions. Participants will complete the same protocol for three sessions with the load and speed of exercise being the only manipulated variables. The protocol consists of a rest period of 2-min, a resting MVO2 with 3 occlusions (10-seconds on and 1-min off), and hyperemia through a 5-min occlusion. The exercise portion of the protocol begins following a 2-min rest period and the exercise is back squatting. After 20-seconds of exercise, participants sit and 5 occlusions occur (5-seconds on and 10-seconds off). The participants complete the exercise portion four times in total and then their session is concluded. In the first exercise session the participant will complete as many squats as possible with the load being their own body weight. The following sessions will be either low or heavy-load. The low-load is 40-percent of the individual’s predicted 1RM and at speed of 48-bpm using a metronome. The heavy-load is 80-percent of the participant’s predicted 1RM and at a speed of 98-bpm. Using a non-invasive device known as the near-infrared spectroscopy (NIRS), we are able to see the fluctuation of the deoxygenation and oxygenation levels in the vastus lateralis throughout the protocol. It is hypothesized the change in load and speed of exercise will affect how quickly oxygen is used in the muscle.

Molecular and microbial identification of environmental bacteriophages in bodies of water on the campus of Coastal Carolina University. (Poster Presentation)

Tylor J. Mattress

Faculty Research Mentor: Paul E. Richardson, Department of Chemistry

Bacteriophages are naturally occurring specialized viruses that infect bacteria. These viruses are present and abundant wherever bacteria are found and a natural part of every ecosystem. Coliphages are a specific type of bacteriophage that infects coliform bacteria. Bacteriophages infect bacteria through a lytic process. Once the virus enters the host, it replicates and bursts through destroying the bacteria and increasing its numbers. The coliform bacteria are present in the gut of humans and animals and are deposited into the environment by fecal waste. The coliform bacteria can be washed into waterway systems, proliferate over time, and cause beaches to be closed due to bacterial contamination. The purpose of this project was to identify bacteriophages found in bodies of water on the campus of Coastal Carolina University using Polymerase Chain Reaction and determine the environmental factors that might be responsible for the virus proliferation. Once identified and isolated, these viruses could be used to treat contaminated water sources, since these viruses are naturally occurring in our

environment. Thus, these viruses can help keep our beaches open, help improve beach access and increase tourist for our community.

Investigating Theatrical Training and its Price (Oral Presentation)
Chris Mayer
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
Theatre is an industry that requires the training of many skills in order to be successful. In order to do this, private lessons and other forms of training may be necessary to improve acting technique, singing, and dancing. How does this paid training skew towards higher-income artists and correlate to their success? Consequently, the main issue becomes paying for all of this training may sometimes not be in the budget for a lower-income family, and their latent potential may never be discovered or fully realized. Specifically, the college audition process for prospective theater majors not only has a high monetary barrier of entry, but audition coaches are also a resource that some do not have access to either, and how can someone with less training try to compare to a video of someone singing with five thousand dollars' worth of vocal lessons. The goal of this research is to shed light on the underserved community and highlight the wall that some may struggle to overcome due to an ever-increasing price tag. Through student surveys of theater majors and research into training prices, hard numbers and testimonies may help to illuminate this issue (Specifically looking at the demographic of the Coastal Carolina Theatre Department). A push for non-profit and the availability of scholarships may one day hope to improve the success of those that could flourish from training.

Drivers of the Formation of Sandy Shore Intertidal Biofilms (Oral Presentation)
Sarah McCready
Faculty Research Mentor: Angelos Hannides, Department of Marine Science
Sandy shore intertidal biofilms perform critical processes such as primary production, remineralization of nutrients, and sediment stabilization; however, questions persist about the processes and characteristics that determine the location of establishment of these biofilms.
In this study, sediment and porewater samples were collected from a biofilm zone containing both biofilm-colored sand and bare sand patches as well as the shallow subtidal (swash zone) at Waties Island Beach, South Carolina. We hypothesized that the biofilm-colored sand patches would have greater concentrations of chlorophyll, dissolved nutrients, and carbohydrates as well as greater values of porosity and LOI when compared to other areas of the beach. However, this hypothesis only held true for concentrations of chlorophyll and some nutrients. The completion of pending analyses (permeability, grain size distribution, particulate phosphorus, iron, carbon, and nitrogen) may help further the understanding of the processes that drive the formation of sandy shore intertidal biofilms.

Impacts of Hurricane Events on Sand Biogeochemistry (Poster Presentation)
Wendy "Cor" McHone
Faculty Research Mentor: Angelos Hannides, Department of Marine Science
Beaches are heavily influenced by extreme events, such as hurricanes. Biological and chemical processes, such as primary production and diagenesis are often interrupted by these events. To examine the effects of hurricanes on coastal biogeochemistry, this study used sand and porewater samples from Waties Island, SC, that were collected before and after Hurricane Idalia (August 28 and September 1, 2023). The samples were analyzed for dissolved nutrients, organic matter, and chlorophyll concentrations. This study found that nitrate and nitrate concentrations throughout the sandy column went from increasing with depth to a lower, relatively uniform profile after the storm. Similarly, phosphate and ammonium concentrations were observed to be lower after the storm. The results of this study were consistent with a rapid exchange of water between the sandy column and water column

due to the surge event. The data collected in this study will be compared to data collected during previous storm events to test for common patterns.

Title IX Today: Analyzing the Policies and Regulations Regarding Transgender Athlete Participation
(Poster Presentation)
Avery McIlwaine
Faculty Research Mentor: Amanda Siegrist, Department of Recreation Sport Management
The landmark Civil Rights law of Title IX celebrated its 50th anniversary in a vastly different society from the one in existence upon its original passing. Initially introduced by Senator Birch Bayh in 1972 to combat gender discrimination in education, in application this amendment largely became a mechanism for ensuring equal opportunities in athletic programs, significantly increasing female participation in sports. While women's athletic opportunities and fair treatment still have room to improve, a new issue pressures the world of access and equality in sport regarding transgender athlete participation. The original wording of Title IX is arguably ill-equipped in navigating the increasing population of transgender athletes seeking participation in high school and collegiate sports. The lack of a clear definition of "sex" as applied in Title IX has created a gray area in the policies and regulations regarding identification requirements specifically for male-to-female transgender athletes. Our changing and complex world needs more specific language regarding protection "on the basis of sex" as a public policy concern. The lack of clear definitions within Title IX regarding "sex" has created ambiguity when attempting to use this legislation as the mechanism for guidance. While transgender athletic participation is currently fairly minimal, there is growing awareness and much outspoken concern, undoubtedly requiring action aimed at addressing discrimination while still protecting the rights of female athletes. This research will analyze current policy proposals regarding transgender athlete participation at the youth, interscholastic, and collegiate levels, and how Title IX may play a role.

Using Muscle Oxygenation to determine inter-set rest duration and the effects on performance
(Poster Presentation)
Riley Melton
Faculty Research Mentor: Justin Guilkey, Department of Kinesiology
Near-infrared spectroscopy (NIRS) is a noninvasive measure of muscle oxygenation and is associated with recovery status. This study will use NIRS measurements to determine inter-set rest duration and compare to a 3-minute rest to observe the impact on metabolic stress, fatigue, and perceived exertion (RPE) during barbell back squat. Participants are healthy, recreationally active adults not engaged in resistance training. Before experimental conditions, predicted one-repetition maximum (1-RM) on barbell back squat was assessed. Participants completed all three experimental trials on separate days in a randomized order. In each experimental condition, participants performed four sets of eight repetitions of back squats at 75% of their 1-RM. The only difference between the conditions was the rest periods. The rest periods in the experimental phases were: 3 minutes; the time it took for tissue saturation index (TSI) and deoxygenated hemoglobin (HHb) to plateau after exercise. Before exercise, a NIRS device was positioned on the participant's quadriceps to TSI and HHb. Bar velocity loss wa measured from the first to last repetition to measure fatigue. Following each set of back squats, participants rated their RPE. Blood lactate measurements were taken before and after each phase to assess metabolic responses. This study could provide insights into optimizing resistance training protocols for enhanced performance and recovery through individualized inter-set rest durations based on muscle oxygenation. We hypothesize that HHb rest duration will be greater than TSI and produce lower bar velocity loss, heart rate, and RPE, but similar to 3-min recovery, despite a shorter rest duration.

Identifying Vibrio in Public Shellfish Harvesting Waters' Bacterial Communities (Poster Presentation)
Lena Meras
Faculty Research Mentor: Megan Cevasco, Department of Biology
Exposure to pathogenic bacteria within the genus Vibrio is a continual public health concern to humans collecting, processing and consuming shellfish. To minimize human health risks as well as economically damaging shellfish harvesting closures, there is a need to develop proactive monitoring efforts that focus on determining conditions conducive to the emergence of microbial pathogens in these areas. Using both culture data and Illumina sequencing of bacterial 16S PCR amplicons from eDNA collected at four public shellfish harvesting areas along South Carolina's Grand Strand, this research explores biotic patterns in microbial community structure and establishes baseline taxonomic data on the occurrence and relative abundance of Vibrio microbial pathogens in these publicly accessed waters.

Whose Aid Develops Africa: An Examination of Chinese and Western Aid to African Countries (Poster Presentation)
Raegan Meyer
Faculty Research Mentors: Richard Aidoo, and Min Ye, Department of Political Science
The African continent has been exploited for much of its history, and other countries are only now attempting to help build this continent into what it has always had the potential to be. Western countries have taken one approach to this, and recently China has taken another. There is an assumption that there are differing motivations behind the aid from these two groups, but these have not been confirmed through research and analysis. The seemingly more important question to me is whether the aid from these two regions produce different outcomes within these countries. My question is: Is Chinese foreign aid or Western foreign aid better at stimulating economic growth within African countries? If one is better, why is this the case? To answer these questions, I analyzed multiple data sets from the years 2013-2020 as they related to the ODA going to African countries from these two regions, their GNI changes from this aid, and whether or not they are an oil-producing country. My hypothesis is that Chinese foreign aid stimulates more economic growth because of their investment in oil-producing countries. This research has the potential to effect how Western countries approach foreign aid and invest in other countries, which has clear implications for international relations and budgetary planning.

Martian Regolith Suspension Due to Ionization (Poster Presentation)
Andrew Michalak
Faculty Research Mentors: Roi Gurka, and George Hitt, *Department of Physics*
The regolith, or heterogenous mixture of unconsolidated deposits, on the surface of Mars are constantly being suspended in the atmosphere at speeds up to 30 m/s. These storms can last for months with the ability to cover the entire planet. Research regarding dust storms on the surface of Mars can help assist with future plans and projects put forward by major government or privately owned agencies. This project works towards better understanding the triboelectric effects on Martian regolith. Calcium Carbonate ($CaCO_3$) was ionized within a wind tunnel using a Quantel Laser to better replicate the environment in which these conditions occur. When no movement was seen after ionization, heat was added into the system to see if higher temperatures also impact the movement of the regolith. A heat plate that reaches 105°C is currently being used in testing to heat the air and surface within the wind tunnel. This concept was put forward due to the fact most storms tend to originate from the southern hemisphere of Mars during the planet's warmer seasons.

Compassion Fatigue, Self-Care, and Well-Being in Helping Professionals (Poster Presentation)
Elizabeth I. Middleton
Faculty Research Mentor: Kerry Schwanz, Melissa Paiva-Salisbury, Department of Psychology
Individuals in helping professions may experience compassion fatigue due to taking on the suffering of others. As symptoms of compassion fatigue appear, well-being can decline. However, engaging in self-care as a positive coping mechanism may enhance well-being. The current study will explore the relationships among self-care behaviors, self-care beliefs, perceived stress, compassion fatigue, and well-being in individuals in helping professions. We administered a set of anonymous surveys to over 300 helping professionals asking them to rate their levels of compassion fatigue, self-care beliefs, self-care behaviors, perceived stress, secondary traumatic stress, burnout, and well-being. It is anticipated that there will be negative associations between perceived stress, secondary traumatic stress, burnout, and well-being and a positive association between compassion satisfaction, self-care behaviors, self-care beliefs, and well-being. Implications for prevention and intervention in helping professionals will be discussed.

How Turbidity Correlates With Kelp In Kachemak Bay, AK (Poster Presentation)
Abigail Noel Mish
Faculty Research Mentor: Richard Viso, Department of Marine Science
Kachemak Bay in Homer Alaska is a diverse ecosystem with many organisms surrounded by glaciers and mountains. As the area continues to warm, glacial releases have occurred, meaning that silt is constantly being released into the bay creating a turbid, suspension of sediment in the water column, home for many species of kelp. To find how this turbid environment correlates with kelp, NOAA is collecting CTD data on a transect across the width and the length of the bay for both 2016 and 2017. This data has been collected but not properly organized or used for research until 2023. There was a correlation analysis ran on the abundance of species of kelp and the turbidity within four study sites. After visualizing the CTD data and finding others past research, the turbidity gradient is present due to the glacial silt via meltwater. If these releases continue to happen, kelp abundance may be negatively impacted by possible light limitation with increasing turbidity. If this is true then three ribbed kelps (*Cymathaere triplicate*) could be more resilient in terms of abundance in turbid waters, kelp cover correlates with many abiotic parameters, and more work is needed to identify drivers that control kelp communities in Kachemak Bay.

Influences on Water Velocity Within a Buoyant Plume: Winyah Bay, SC (Poster Presentation)
Katherine Mitchell
Faculty Research Mentor: Diane Bennett Fribance, Department of Marine Science
The interaction of freshwater discharge from rivers with saline water from the open ocean results in water masses identified as river plumes. River plumes, which contain oceanic and riverine properties, are affected and altered by physical processes of both respective environments. Water velocities in particular are responsive to coastal and estuarine processes including wind, tides, pressure gradients, and density gradients. In this study Acoustic Doppler Current Profiler (ADCP) data, along with temperature and salinity profiles, were collected from the Winyah Bay river plume in South Carolina (USA) to observe and compare velocities throughout the water column. These data were examined to determine the competing influences of Ekman transport, tides, and buoyancy-driven flow both within and below the river plume. Over the four days of data collection, various regions of the plume were sampled, while conditions (including winds) varied, allowing for a characterization of the different plume regions under a variety of forcing conditions. Understanding how the plume and ambient velocities vary

spatially and with time contributes to our ability to predict plume behavior under these different conditions.

Student Perspectives Throughout the Evolution of Coastal Carolina University, 1953-2023 (Oral Presentation)
Connor V. Mojo
Faculty Research Mentor: Dominique Werboff, Director of Arboriculture
The campus of Coastal Carolina University has changed significantly since the initial construction of the Singleton Building in 1963, developing and expanding to encompass hundreds of acres of land and thousands of students, faculty, and staff; however, student perspectives throughout the evolution of the institution have not yet been investigated at length, and the single history that exists was written by a faculty administrator. Here we utilize all available archived volumes of The Chanticleer Student Newspaper (more than 700 volumes) and all archived editions of the student-curated Atheneum Yearbook to craft a more nuanced, holistic story that gives agency to student visions of a future Coastal Carolina and shows how these visions were accommodated by or conflicted with the visions of administrators. Furthermore, we give special interest to sustainability on Coastal's campus, and how growing environmental advocacy among students and faculty facilitated a sweeping reconceptualization of Coastal's education and developmental initiatives as well as the greater identity of Coastal Carolina relative to the surrounding area and other colleges in the state. What we are left with is a new understanding of the role that the student body has played in the evolution of Coastal Carolina, and how student interests, through mechanisms of advocacy like The Chanticleer Newspaper and Atheneum Yearbooks, can bring about substantial changes not only in the particulars of construction and administrative planning but also in the identity of Coastal Carolina as an institution and community.

Anthropogenic Affects on Nest Composition (Oral Presentation)
Jenna Monroe
Faculty Research Mentor: Chris Hill, Department of Biology
Horry County, South Carolina is a coastal community that is experiencing rapid development. Different land uses have different levels of litter, those used heavily by people having the highest litter levels. These changes in landscape can affect local wildlife. One such species that may be affected by higher levels of litter is the Loggerhead Shrike, a species that has been experiencing population decline in the last several decades that commonly nests in highly developed areas. An area lacking research is how the volume of litter surrounding nests would affect the volume of litter found in the nests. This would help to answer if the shrikes are seeking out the litter, or using what materials are most available. I dissected 16 Loggerhead Shrike nests that were gathered in Horry County, South Carolina. I measured the weight of the plastic, paper, string, fibrous materials, and natural materials in each of these nests. I then gathered litter in a 75 meter area using 2 square meter transects. I found that the volume of litter materials found in nests ranged from 5.07% to 33.26% and connected this to the volume of litter found in the area surrounding their nesting site.

Comparative Analysis of EmyBug (Poster Presentation)
Madison Murray, Gabrielle Sowers, Monica Manley, and Ella Schad
Faculty Research Mentor: Daniel Williams, Department of Biology
Bacteriophages are viruses which infect bacterial hosts and are the most abundant biological entity in the known universe. Numerous phages have been sequenced and characterized, and comparative analysis of sequenced phages allow for identification of conserved genomic regions that are likely important for phage biology. EmyBug was discovered and sequenced on Coastal Carolina's Campus. As a part of BIOL 303-Phage Bioinformatics, we are currently annotating its genome. Our initial draft

annotations indicate EmyBug is similar to other phages. Fayely, which was also discovered on Coastal Carolina's campus, is very similar to EmyBug; they both have similar genome lengths and share 99% nucleotide identity. Moreover, auto annotation revealed that EmyBug has 92 genes versus Fayely's annotated 96. Through further bioinformatic analysis, we will complete genome annotation of EmyBug. This will advance our knowledge on phage biology and genomes that have been conserved over time.

Isolation and Analysis of Extracellular Vesicles from Lactic Acid Bacteria (Poster Presentation)
Isabel Myers
Faculty Research Mentor: Brian M. Lee, Department of Chemistry
Streptococcus mutans, a lactic acid bacterium, is the one the main causative agents of dental caries. Extracellular vesicles are produced by lactic acid bacteria and are hypothesized to transport proteins and small RNAs that could have a role in communication and regulation. The extracellular vesicles of S. mutans are thought to play a role in the development of biofilms and the pathogenicity of dental caries. EVs are produced by prokaryotic bacteria and derived from the outer membrane in Gram-negative bacteria. The thick layer of peptidoglycan present in Gram-positive bacteria was thought to prohibit release of EVs. Recent studies have suggested that autolysin may allow EVs to be released from Gram-positive bacteria. The goal of the study is to develop an isolation procedure and observe the contents of the isolated EVs from lactic acid bacteria. It was hypothesized that the protein and RNA content of the EVs could provide greater insight into the mechanisms of intercellular communication. Streptococcus thermophilus was grown in culture. The growth cultures were centrifuged to pellet the cells. The supernatant was filtered to remove the remaining bacterial cells. The filtrate was concentrated by ultrafiltration. The retentate was presumed to contain EVs, and gel electrophoresis was run to determine protein content. Gel filtration was also done to isolate EVs and characterize them by size. Scanning electron microscopy was used to observe the membrane surface of cells isolated from growth cultures and to look for budding EVs.

Operation Avarice: Colonial Ideology Through Gameplay (Poster Presentation)
Samantha Oliver and Alexandra Szyndler
Faculty Research Mentor: Alex Hogue, Department of Languages and Intercultural Studies
When Earth eventually perishes from the greed of capitalist nations, will we move on to another planet and begin the vicious cycle of exploitation again? Will we learn from our mistakes, or will our avarice determine our fate yet again? Operation Avarice is a creative project with the intention of conveying themes of politics and uncertainty while providing an entertaining experience for players. The premise of our board game begins with an uninhabitable Earth due to over-pollution, forcing players to claim other planets to colonize for themselves. Players randomly select one of four roles: Engineer, Scientist, Sociologist, and Navigator, having different advantages during gameplay. The board’s layout is a simple roadmap of meteors, with players encountering obstacles at every turn. Backstabbing and greed seem to be fundamental to success in this race to colonize new worlds. However, players must continually reflect on whether the acquisition of material wealth and resources is worth the destruction felt by other players and the inhabitants of the various worlds being colonized. The limited cards and resources to obtain are symbolic of Earth’s diminishing fossil fuels and changing environment. This is juxtaposed by the victory structure of possessing the most planets. Our game, through its rhetoric and design, will demonstrate the hypocrisy that lies within our current governing structures to our players.

Virtual Reality Public Speaking Exposure and the Effect of Personality (Oral Presentation)
Nathaniel A. Olsen
Faculty Research Mentor: Andrew Terranova, Department of Psychology

There is a dearth of research in the literature surrounding the efficacy of Virtual Reality Exposure (VRE) in decreasing Public Speaking Anxiety (PSA) and how personality traits relate to the habituation process. A pre-post quasi-experimental design will be used to determine the effect of three repeated sessions of virtual reality exposures of simulated public speaking scenarios on participants with varying levels of PSA. Measurements for PSA and personality traits will be conducted using established scales, including the Public Speaking Anxiety Scale and the Big Five Inventory (BFI; Bartholomay & Houlihan, 2016; John et al., 1991; John et al., 2008). Following the completion of data collection, results will be analyzed to see if there is a significant change in PSA over the course of the sessions. Correlations between personality traits and change in PSA will also be recorded.

Correlation Between Weather Patterns and Nest Success in Loggerhead Shrikes (Oral Presentation)
Dominic C. Parise
Faculty Research Mentor: Chris Hill, Department of Biology
Weather is known to affect nesting success in birds and can dramatically alter population trends. Although linkage between weather and nesting success is understudied, comparing weather conditions between years could help predict nest success. Loggerhead Shrikes (*Lanius ludovicianus*), predatory birds that inhabit open areas, have seen a decline in their population. I examined if this decline is linked to yearly weather patterns affecting nest fates. Using a population of breeding shrikes in urban South Carolina, I compared nest fates to the average daily temperature, precipitation, and cloud coverage for the summers they nested and to weather within a key timeframe around each nesting attempt. Yearly Loggerhead Shrike nest success ranged from 36-54%. For these yearly rates, there was no significant relationship between yearly rate with the corresponding summer weather. I will discuss the ability of weather, within differing time intervals, to predict individual nest fate.

Life on the Big Screen: Seasonal Tidal Creek Habitat Use and Potential Ecological Effects of Piscivorous Fishes (Oral Presentation)
Shelby G. Pawlikowski
Faculty Research Mentor: Juliana M. Harding, Department of Marine Science
Estuarine systems provide critical habitats and highly variable environments that set the stage for complex species interactions. Many estuarine habitats are used by resident species year-round while transient species occupy these habitats seasonally. North Inlet estuary resident species include smaller benthic fishes like the striped blenny (*Chasmodes bosquianas*) and feather blenny (*Hypsoblennius hentz*) as well as well as larger transient species that eat blennies like spotted seatrout (*Cynoscion regalis*) and red drum (*Sciaenops ocellatus*). Adult male blennies have high fidelity for nest shelters year-round. Their shelter use patterns are easily monitored using underwater video cameras. Transient species habitat use patterns and potential effects on resident blenny behavior were quantified. The resulting digital video was analyzed for the presence and absence of blennies and transient fishes, blenny behavior with and without transient fishes, and the approximate size of the transient fishes. The cameras monitoring blenny nest shelters recorded video from sunrise to sunset for 22 days from January 2020 to April 2020. Relationships between transient fish presence and abiotic factors including the daily average water temperature, salinity, depth, lunar day, and tidal stage will be discussed. Blenny behavioral responses to transient fishes will be described in relation to fish species and size as well as abiotic factors.

Attempted Syntheses of the Flinderole Core (Poster Presentation)
Ana Pettijohn and Claire Romain
Faculty Research Mentor: Bryan Wakefield, Department of Chemistry

The flinderoles A-C are a class of anti-malarial bisindole alkaloids from plants of the Flindersia genus. Flinderole C was specifically from the Papua New Guinean plant called *F. amboinensis* and is the most potent antimalarial of the group. Malaria is a parasitic infectious disease usually found in the hot, tropical regions of the world, such as parts of Africa. It is estimated that nearly half the world's population lives in an area where it is endemic. Furthermore, malaria was estimated to have caused over 600,000 deaths in 2020. While measures to limit the spread of the disease lessen its impact, there is still a need for treatments. There are numerous drugs and naturally occurring products that have been used to treat malaria but many have lost their effectiveness due to drug resistance, so flinderoles could be a platform to build new drugs on.
Our research is focused on using an intramolecular Friedel-Crafts reaction to construct the five membered ring of flinderole. This step requires the presence of an allylic alcohol which we have attempted to install in a variety of ways. The initial step involves nucleophilic addition of indole to a bromoester. We have employed a number of different bromides with varying results. We have been able to make progress toward the necessary alcohol to explore the cyclization reaction. The goal is to synthesize the core of flinderole more efficiently to enable the development of analogues to understand their antimalarial properties.

Necessity for Prostitution Prevention in the 19th Century (Poster Presentation)
S. Taylor Pierce
Faculty Research Mentor: John Navin, Department of History
The industrialization of America in the 1800s developed larger municipalities and a new social class, the new wealthy businessmen elite. However, these cities became ubiquitous with the prevalence of prostitution, which became familiar in many city environments. These businessmen were more than willing to pay women for their time...and virtue. Commentators in this period blamed the increase of prostitution on the new-found luxury of cities, the rate of female education, the relaxed state of public morals, and the need to check inhibitions rather than the ignorance of moral decency. It was easier for inhabitants to recognize the moral malady than to develop a restorative program. The curdling of public decency came to an unfounded height, instead of the former ghast feeling many had it turned into a new fixation. The debate centered on the freedoms individuals should be allowed to have. Can you place limitations on women regarding their sexual morality? How can you regulate prostitution to protect innocent children without squandering the ability of women to support themselves and their dependents? Utilizing newspapers from the 19th century, this paper delves into the debate for regulating prostitution. Along with noting the negative effects felt by community members and how it benefitted the women in the industry.

The Effectiveness of Focused Breathing Regarding Mindfulness in Young Adults with Intellectual and/or Developmental Disabilities (Oral Presentation)
Evie Burroughs, Alexis Hoffman, Stephanie Panos, and Savannah Piziak
Faculty Research Mentor: Kaunert-Whiteman, Department of Recreation Sport Management
Mindfulness, defined as the awareness and nonjudgmental acceptance of one's moment-to-moment experience is thought to be effective in many forms of psychological distress (Keng et al., 2011). Stress is a mental or physical response to an external cause that resolves once the situation is resolved, while anxiety is an internal reaction to stress involving persistent feelings of dread with no current threat. Both stress and anxiety can cause worry, tension, headaches, and loss of sleep (National Institute of Mental Health, 2022). Individuals with disabilities often endure stress when completing over-demanding tasks in school, during social interaction, and while completing multi-step cognitive tasks (Laborde et al., 2016). Mindfulness for individuals with disabilities can improve attention skills, aggressive behavior, anxiety, social skills and academic performance due to increased mood, self-efficacy and the ability to

self-regulate (Buckhardt, 2017). Conscious breathing may be a successful resource for searching a state of mindfulness in the classroom for many populations, from instructors to college students (Kozisek, 2011). Students with disabilities can use breathing techniques to self-regulate when met with overwhelming emotion because oxygen is able to fulfill the needs of the lungs and brain bringing clarity, calmness, energy and positivity (Kozisek, 2011). This study surveyed twenty LIFE (Learning Is For Everyone) students engaging in mindful breathing techniques for four weeks. The participants will be given a pre and post survey questioning thoughts, feelings and body sensations. This study aims to answer the following question: Can mindful breathing reduce stress and anxiety levels in students with disabilities?

Analysis of Nickel and Copper Metal in Honey (Poster Presentation)
Bradley Pope
Faculty Research Mentor: Drew Budner, Department of Chemistry
There is a belief that consuming locally produced honey has several health benefits and can help with reducing seasonal allergies. For this belief to be true then there must be some differences with honey depending on where it is produced. This would include potential differences in the amount of these metals present that can be corelated to the geographical origin of the honey. An analysis using Graphite Furnace Atomic Absorption Spectroscopy to determine the metal contents of nickel and copper in a variety of honeys produced in and in the states around South Carolina was performed to try to answer this question.

Behavioral responses of mummichogs (*Fundulus heteroclitus*) to visual and chemical cues from predators and distressed conspecifics (Poster Presentation)
Megan Quinn
Faculty Research Mentor: Eric Rosch, Department of Marine Science
Many organisms, especially fish, participate in herding or schooling behaviors for various benefits such as increased survival rates, better hydrodynamic efficiency, or for hunting tactics. Due to being in a tightly packed group, disturbances or predation in their environment can result in group behavioral changes. Fish release hormones into surrounding water through excretions like urine as a result of a disturbance which may affect their surrounding conspecifics. In this experiment a lone mummichog is exposed to either water from a predator or water from other stressed individuals. For some trials the test individual was able to observe the stressing of the other individuals while others were not, to determine the difference between visual and chemical cues. Physical behavioral changes such as changes in position, respiration rates, or fin movements are observed and recorded. Analyzing the extent of these behavioral changes will lead to conclusions about the importance of visual and chemical cues in not only a fish's lifestyle, but also other species that have schooling or herding behaviors. Gauging which aspect may be more important can give insight on what issues need to be prioritized for finding solutions.

Making Peace Happen; Examining External Support for Disarmament, Demobilization, and Reintegration Programs (Oral Presentation)
Mary Lauren Reese
Faculty Research Mentor: Matthew Cobb, Department of Intelligence and Security Studies
Why are some disarmament, demobilization, and reintegration methods more successful than others when facing insurgent groups? In this project, I analyze how external actors can assist DDR processes. I am also interested in community cooperation with government efforts. I explore topics such as the labeling theory which states that once an offender is labeled as such, their deviant behavior will

increase, “secondary deviance”, absence of nonviolent means for change, and unproportionate punishments including those that are too weak or too harsh. I also explore instances where governments have tried to hear out a group’s demands and what successful negotiations have consisted of. Some factors discussed include education and employment opportunities and disillusionment with the success of violence. Lastly, I compare and contrast different attempts by various government agencies and those of community/local-led efforts to see which type leads to greater success. My expected finding is that United Nations and national government-reinforced community-led efforts have stronger success with insurgent groups accepting the DDR efforts/terms.

The Impacts of Priming on the Perceptions of Mentally Ill Offenders (Poster Presentation)
Jenna M. Ricker
Faculty Research Mentor: Terry Pettijohn, Department of Psychology
The study at hand will determine the impacts of priming on the perceptions of mentally ill offenders. Using video conditions and crime scenarios, participants (n = 83) completed the Perceptions of Criminal Defendants Scale (PCDS), the Empathy Quotient (EQ), and the Public Attitudes Towards Offenders with Mental Illness (PATOMI) questionnaire. It was hypothesized that individuals who were exposed to a documentary about borderline personality disorder would give out more lenient sentences, have more empathy, and have overall more positive perceptions of offenders with mental illness. On the other hand, it was hypothesized that participants who were exposed to a shoplifting documentary would give out harsher sentences, have less empathy and poorer perceptions of offenders with mental illness. This study found no significant main effects between the television shows on the perceptions of criminal defendants, empathy scores, or the perceptions of mentally ill offenders. This study also found no significant main effects between presence of borderline personality disorder and the perceptions of criminal defendants, empathy scores, and perceptions of mentally ill offenders. There was not a significant interaction effect between priming and the perceptions of mentally ill offenders in the BPD documentary and BPD present scenario condition.

Evidence Presentation in Criminal Trials (Oral Presentation)
Grace M Robinette
Faculty Research Mentor: Skye Woestehoff, Department of Psychology
Studies have previously discovered links between the pay, experience, and type of evidence presented by the expert witness and the jury. Participants read a summary of a murder trial with an expert witness who testified on the strengths (prosecution witness) or weakness of fingerprint evidence (defense expert) or testified neutrally (neutral expert). Dependent variables include the perceived reliability of fingerprint identification (assessed pre- and post-summary) and verdict (assessed post-summary). 72 participants have completed the study thus far out of a proposed sample size of 90; data collection will be completed by the end of March. I hypothesize that participants will have their perceptions of forensic evidence changed based on how the expert witness testifies. I expect that participants who read the trial transcript with the prosecution expert will believe the evidence to be stronger than they did before reading the trial transcript. I expect that participants who read the trial transcript with the defense expert will believe the evidence to be weaker than they did before reading the trial transcript. I also expect that participants who read the trial transcript with the neutral expert will not have their perceptions of the evidence significantly changed after reading the trial transcript. Finally, I expect that more participants will find the defendant guilty when they read the trial transcript with the prosecution or neutral witness then those who read the trial transcript with the defense witness.

Psychological Interventions and Perceptions of Sport Psychology Among Division I Athletes (Poster Presentation)

Keirstin A. Roose

Faculty Research Mentors: Jamie McAllister-Deitrick, and K Michelle Singleton, Department of Kinesiology

Sport psychology has proven to be an essential component to an athlete's performance. Incorporating mental attitude and physical skills in sport plays an important role in the development of athletes. Despite the considerable amount of benefits sport psychology has to offer athletes and athletic staff, the receptiveness towards sport psychology among these individuals varies. Previous research shows factors such as access to services, misconceptions of sport psychology, and social stigma influences an athlete's attitude towards working with a sport psychology professional or consultant. The purpose of this study was to investigate the impact of a psychological intervention on athletes' perceptions of sport psychology. Participants were NCAA Division I women's soccer players (n = 25) during in-season training/matches. The intervention consisted of five team meetings with specific focus areas throughout the season and optional individual meetings. Athletes completed a questionnaire developed to evaluate attitudes toward sport psychology consultation post-intervention. The questionnaire was scored on a 7-point Likert scale. Descriptive statistics revealed an average score of 5.39 ± 0.9. The results show female athletes overall have high confidence in the benefits of sport psychology and low stigma. The findings suggest the use of psychological interventions can positively impact athletes' perceptions of sport psychology. Future research should include pre/post-testing and control groups to fully explore the impact of psychological interventions on perceptions of sport psychology among the athletic population. Additionally, assessing gender and sport differences would be advantageous.

Impact of yeast strain on millet beer (Poster Presentation)

Leah A. Rose

Faculty Research Mentor: Drew Budner, Department of Chemistry

Gluten free beer has gained popularity among consumers with a gluten intolerance such as celiac disease, or those seeking an alternative beer option. Traditional beer contains grains that contain gluten such as barley, wheat, or rye all in which play a crucial role in the brewing process. The gluten free grain, millet, has gained popularity throughout the recent years due to its unique flavor and being 100% gluten free. As a vital component of the brewing process, yeast plays a crucial role in shaping the final product. The sensory characteristics of millet beer, such as aroma, flavor, and mouthfeel, are significantly influenced by the choice of yeast strain. Certain strains may impart fruity, or spicy contributing to the complexity and diversity of the beverage. Moreover, yeast metabolism during fermentation can directly affect the production of volatile compounds, which further shape the sensory attributes of millet beer. Samples are taken the day of brewing, 7 days into fermentation, and 14 days into fermentation. Samples taken are characterized by taking the pH, total titratable acidity, and color. The data collected shows that millet can achieve fermentation within approximately 7 days. This provides evidence that a gluten free beer not only meets consumer expectations but also adheres to the strict gluten-free regulation.

The Effect of Lighting and Sound on Fiddler Crab Behavior (Poster Presentation)

Veronika Rustembekova

Faculty Research Mentor: Eric Rosch, Department of Marine Science

This research was focused primarily on Red-Jointed Fiddler Crabs (*Minuca minax*) and Atlantic Mud Fiddler Crabs (*Minuca pugnax*), that were collected at Waties Island, SC. In the laboratory, crabs were separated and housed under either ambient light conditions or in total darkness. They were then tested to observe the effects of different sounds on their behavior. Sounds chosen for this research were: no

sound (control group), ocean sounds such as pounding waves, predator sound such as Grey Heron (*Ardea cinerea*) and Mozart's Piano Sonata No 16. Consistently throughout the experiment, distinct behavioral patterns were observed when exposed to ocean and predator sounds. The behavior expressed was moving towards the direction where ocean sound was playing. A sense of community was observed among Atlantic Mud Fiddler Crabs (*Minuca pugnax*) when playing grey heron calls, they huddled close to each other and lay low under the water level motionless; while Red-Jointed Fiddler Crabs (*Minuca minax*) expressed hectic and disruptive behavior trying to hide from the unseen predator. These behaviors may reveal how they perceive and respond to sound cues in the wild as a possible survival technique. These findings build upon what we know about how animals interpret stimuli from their surroundings and how they modify their behavior in response to this information.

The Use of Aryl Boronic Acids to Promote Friedel-Crafts Reactions with Unactivated Allylic Alcohols (Poster Presentation)
Garrett A Sammons
Faculty Research Mentor: Bryan Wakefield Ph.D, Department of Chemistry
Aryl boronic acids have been shown to promote a wide range of Friedel-Crafts reactions. In these reactions, the boronic acid activates allylic alcohols that are benzylic, generating a stabilized carbocation that can undergo addition. The use of these boronic acid catalysts in Friedel-Craft reactions with allylic alcohols that are not activated by aryl groups has been under explored. Recently, more active catalyst systems have been reported and open the possibility of using less reactive alcohols. This project hopes to address two main questions. First, we will determine if these new catalyst systems can activate off less active alcohols, including primary alcohols, to expand the range of compounds that can be synthesized. Second, is to determine if five membered rings can be constructed within intramolecular Friedel-Crafts reactions. There are some examples of six or seven-membered rings formed in this type of reaction, but five-membered rings are conspicuously absent. We are working to determine the utility of boronic acid in the formation of five-membered rings and determine the optimal conditions. We have constructed the needed allylic alcohols by allylation of 4-methoxylphenol followed by metathesis with allyl alcohol or 2-methyl-3-buten-2ol. Boronic acid will then be used under various conditions to promote the cyclization. The formation of a five-membered ring is important to our work to synthesize natural products that contain this motif, such as the flinderole family of natural products.

The Effect of Physical Exercise on the Performance of a Dexterity Task (Poster Presentation)
Mackenzie Sarne
Faculty Research Mentor: Terry F. Pettijohn, Department of Psychology
Recent studies have been conducted on the relationship between physical exercise and academic performance. Findings have determined that physical exercise decreases burnout, which positively increases academic performance as well as cognitive functioning. This study will research whether physical exercise affects a student's performance on a dexterity task. In this study, the Lafayette Grooved Pegboard Test will be used to test the performance of a Dexterity task as it relates to cognitive functioning. 36 Coastal Carolina University students were studied and each student was assigned to one of three conditions. The first two conditions were physical exercise tasks which included Wii Mini Golf for the first condition and Physical Mini Golf for the second condition. The third condition did not participate in a physical activity. This study found that students who participated in Physical Mini Golf performed better on the dexterity task than students who participated in Wii Mini Golf. However, the group that did not participate in a physical exercise performed best out of the three groups. This study

also found that the Physical Mini golf group had the highest measured heart rate. In this study, physical activity type and heart rate did not significantly affect the student's performance on a dexterity task.

British Policy and Colonial Response (Oral Presentation)
Tyler D Schoup
Faculty Research Mentor: John Navin, Department of History
Britain's seven-year involvement in the French and Indian Wars placed a significant financial strain on the country. In an effort to recuperate some of their losses, several fiscal policies, like the Sugar Act of 1764 and the Coercive Act of 1774, were enacted, which prompted a colonial outcry that led to the Revolutionary War. John Dickinson's Letters from a Farmer in Pennsylvania and various excerpts from the Diary of John Adams shed light on these failed British policies and the reasons for the vigorous response from the American Colonies.

Error Analysis of Numerical Weather Prediction Forecasts and Remotely-Sensed Air Properties (Poster Presentation)
Caleb R. Sease
Faculty Research Mentors: Erin Hackett, Department of Marine Science and Daniel Greenway, Coastal Marine Systems Science Doctoral Program
Communication and sensing technologies are influenced by atmospheric properties such as the air's index of refraction, humidity, and temperature. Recent research has demonstrated that radar can remotely sense the index of refraction in the atmosphere, referred to as refractivity. This development is important because it allows larger spatial coverage and finer temporal resolution than is possible with in-situ atmospheric sensors. More recently, on-going research is extending this remote sensing capability to humidity using refractivity as an intermediary. Numerical weather prediction (NWP) models provide forecasts of atmospheric conditions and can be useful for both evaluating the accuracy of remotely-sensed air properties and for including them into the remote-sensing itself, when necessary. However, these weather forecasts are not always accurate and could mislead evaluation of these remote sensing techniques and/or cause inaccuracies in the remote sensing itself.
Advancement of these remote-sensing methods requires an assessment of the accuracy of remotely-sensed refractivity and NWP forecasts. This study focuses on error analysis of NWP forecasts and remotely-sensed refractivity from the Coupled Air–Sea Processes and Electromagnetic Ducting Research-East field campaign. These evaluations include statistical comparisons with direct meteorological measurements, such as root mean squared error or correlation coefficients, as well as review of the relative timing of the direct measurements with respect to the diurnal cycle and the timing of the forecasts or remotely-sensed refractivity. These analyses enable an overall assessment of the NWP forecasts and refractivity that can be used to test and evaluate on-going research aimed at extending remote-sensing technologies.

Sexism; on screen and stage, and how it transcends time (Oral Presentation)
Gabriella R. Seebode
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
How can a field dependent on "leading ladies" be inherently sexist and built upon patriarchal ideals? In art, the surrounding political and cultural climate of the time shapes the work significantly; however, sexism in performance arts, through stage and film, has not only shaped the individual works but has shaped the industries and their standards significantly. This research paper will investigate the significance of sexism on screen and stage, how they overlap, and how this theme has transcended through time. To further investigate, I will select four pieces consisting of golden and modern age film

and theatre. For example, Greta Gerwig's 2023 Barbie took a new take and presented the concept of the patriarchy through the film. However, this led to the same issues where this grossing beloved film continued being looked over for categories for women in award programs such as the Oscars. These issues of the patriarchal influence in the performance industry have been present for many years and influence today's media.

Assessing Water Quality of South Carolina's Grand Strand and the Health Implications Pollutants Have on Exposed Communities (Poster Presentation)
Emma Shane
Faculty Research Mentor: Jesse Rouse, Department of Anthropology and Geography
Past unregulated human activity caused drinking water resources to be affected by contaminants in coastal South Carolina's Grand Strand. Most drinking water sources in this region show levels of pollutants that exceed federal limits. These contaminants have leeched into groundwater and private wells from the soil as well as direct impacts to surface water. The health effects of long-term exposure to these chemicals can be fatal and can cause chronic, noncommunicable diseases such as cancer and developmental defects. This poster will highlight local groundwater quality data from testing sites in the Grand Strand to show where high levels of pollutants could have negative health impacts.

Assessment of Litter Composition in the Waccamaw River (Poster Presentation)
Kiana Rae Shibler
Faculty Research Mentors: Pamela Martin, Debra Buffkin, and Winyah Rivers Alliance, Department of Political Science
This research project aims to comprehensively evaluate the diverse array of litter present in the Waccamaw River, focusing on identifying the various types and brands encountered. The study employs a systematic approach to analyze the type of litter found. By examining past and current data, the project aims to find patterns, fluctuations, and potential trends in the types and brands of litter, shedding light on the environmental impact of specific materials.
The methodology involves documentation and categorization of litter items retrieved, including plastics, metal cans, packaging materials, and other debris. Data analysis will be conducted to determine the prevalence of different litter categories and the dominant brands contributing to river pollution. The findings of this research will not only contribute to our understanding of the current state of the Waccamaw River but will also provide valuable insights for future conservation efforts and policy considerations.
Ultimately, the research aims to inform companies and the public about the specific types and brands of litter affecting the Waccamaw River, fostering a proactive approach towards mitigating pollution and preserving the ecological integrity of the Waccamaw.

The Impacts of Boat Traffic on the distribution of Striped dolphins, *Stenella coeruleoalba*, in the Aegean Sea (Poster Presentation)
Cierra Alexis Shimp
Faculty Research Mentor: Robert Young, Department of Marine Science
Increased boat traffic has been shown to displace striped dolphins from their usual sites or create changes in their behavior. In the Aegean Sea, increasing boat traffic has generated concerns for striped dolphins, *Stenella Coeruleoalba*. This research was completed during a six-week internship in Greece during the summer of 2023. We analyzed dolphin survey data collected by researchers at the Archipelagos Institute of Marine Conservation to determine if the abundance and distribution of striped dolphins were correlated with boat abundance and distribution. Between January 2021 and December

2022, there were 111 surveys in 2021 and 116 surveys in 2022 conducted in the waters off the shore of Samos, Greece. Each survey lasted approximately 6 hours and followed standard track lines. Once a sighting began, if necessary, the boat would slightly break off track to get closer while crewmembers observed, and tried to get a count along with a photo ID. During this time, an estimation of distance from the boat, dolphin behavior, and type of boat(s), if any, were within sight was also noted. There were estimated positions for each boat so their locations could be mapped later. Rather than an avoidance behavior, the data revealed a positive correlation between boat abundance and dolphin abundance. One concern is that this may be related to the illegal feeding of dolphins by tourists, which will be a focus of future studies.

What Represents You? (Oral Presentation)
Elijah Smith
Faculty Research Mentor: Eric Schultz, Edwards Center for Inclusive Excellence
This project is about showing the topic of "Representation Matters" in a different light than usual. When some first think of representation they think of race, gender and sexuality as what matters most but in reality, none of these groups think as a monolith. We can still have representation and diversity using these groups and it is important to have that, but more importantly the representation and difference in how each person thinks in these groups can be more beneficial. This can benefit businesses, teachers, politicians in their endeavors and it can help everyone in their everyday life and interactions. In this project it will show how people of the same race, gender and sexuality all think differently or even similarly on certain topics. This will be done by doing live interviews of a randomly selected group of people and tallying their answers while comparing and contrasting their answers. Then it will be shown in a short video/film. The project will focus mainly on people of the 18-22 range at Coastal Carolina University. The goal of this project is to show that representation isn't just shown in our physical identity but also in our identity as a person.

Sylvia Plath as the Obsessed Artist in Film (Oral Presentation)
Jordan Smith
Faculty Research Mentor: Steve Hamelman, Department of English
Sylvia Plath, appraised poet and novelist who garnered fame during the 1950s and 60s, is most notable for her tragic and untimely death by suicide at the age of 30. A well-versed scholar, Plath was publishing poems straight out of high school and sought out her own success in literary magazines reserved only for the elite as well as establishing a name of her own. Given that her fame comes from copious poems reflecting on her depression, deceased father, and striving for perfection, it is easy to connect actions during her life that correlate with a trope in Hollywood film known as the "Obsessed Artist," which focuses primarily on a character so devoted to an unachievable perfection of their craft or skill that it usually takes them to a breaking point, sometimes resulting in death. By analyzing patterns in Plath's life as well as connecting her actions to those of popular film characters within this arc, I am seeking to find if this real-life individual can exist within a seemingly fictionalized trope. As Plath's desire for greatness devoured her life in many aspects and it became harder for her to reap the benefits of her dedication, her story may be the key to answering this question. It is clear, evidently, that Plath does serve as a living example of an obsessed artist who, unfortunately, succumbed to the stress and unrealistic standards of her own perfection.

The Chesapeake Bay Regional Planning Compact: A Proposal on How to Save the Bay (Poster Presentation)
Natalie S. Smith

Faculty Research Mentors: Jennifer Mokos, Honors College & Jacqueline Kurlowksi, Department of Political Science

The Chesapeake Bay Watershed stretches across six states and the District of Columbia which hug the Northern- East coast of the United States. Right now, the representatives of the watershed have a signed agreement of goals and outcomes concerning the Bay. This agreement holds no accountability or standing legally. The purpose of this paper is to discuss the scope of the agricultural and development pollution going into the Bay and propose the adoption of a regional interstate compact. Interstate compacts between the watershed states would be ideal in combating the shortcomings of the Chesapeake Bay Agreement. This will force states to follow environmental regulations to prevent centuries more of destruction. This is necessary because the Bay is plagued by immense pollution, erosion, over development, and other environmental factors that are capable of management and regulation. For the enviable climate issues, the 250,000 acres of tidal wetlands and coastal lands across the region are venerable to sea level rise and natural destruction. The territories need to not only be cohesively on board to combat these issues, but they need the necessary government oversight to ensure implementation. Maryland, Pennsylvania, and Virginia equate for roughly 90% of the pollution circulating the Bay (CBF, 2022). This pollution ranges from wastewater, agriculture and suburban runoff, and overall increased stormwater. A regional interstate combat would offer regulated upkeep and maintenance compliance, funding to states, and account for the Amish, underprivileged, and underserved communities. If changes do not come soon, there could be permanent damage to the local economies, homes, habitats, and more.

Sunscreen Use and Skin Cancer Awareness (Poster Presentation)

Avery Snyder

Faculty Research Mentor: Michael Dunn, Department of Public Health

This study's purpose was to assess student athletes at Coastal Carolina University based on their beliefs of skin cancer and their sunscreen behaviors. Data for this study was gathered from outdoor athletes through scanned QR codes around athletic facilities and sent through an app by the athletic director. Majority of students who took the survey reported they did not wear sunscreen in past games/practices. Of those who felt susceptible to skin cancer, believed their lifestyle increased their risk of skin cancer, and felt reapply sunscreen was not an inconvenience were more likely to wear sunscreen during their games/practices. Those who felt susceptible to skin cancer due to their lifestyle and who reported their friends wore SPF 30 sunscreen were more likely to get sunburnt at games/practices. This study further shows the importance of informing those of all ages about sunscreen protection and skin cancer awareness. There is a need for more encouragement and information spread about this topic to have a greater chance at preventing skin cancer.

Ask the Experts: Using Helping Professional and Expert Feedback to Refine the Self-Care Behaviors and Beliefs Scale (Poster Presentation)

Jessica Lynn Suhadolink and Elizabeth Middleton

Faculty Research Mentors: Kerry Schwanz, and Melissa P-S., Department of Psychology

Compassion fatigue is common among helping professionals due to taking on the suffering from others. However, limitations of currently available self-care assessments impede testing preventions and interventions for compassion fatigue. The purpose of the current study was to utilize professional and expert feedback to refine items from the initial version of the
Self-Care Behaviors and Beliefs Scale (SCBBS). A sample of helping professionals (n = 27) rated an initial pool of 80-items which measured individuals' valued practices and beliefs that promote personal well-being, they were asked to complete the assessment and to note any redundancies, wording, or clarity

issues with the items. Six experts in the field of self-care were asked to review and rate each of the items of Self-Care Behaviors and Beliefs Scale (SCBBS) based on relevancy (1 = not at all relevant to 7 = highly relevant) and clarity (1= not at all clear to 7 = extremely clear) and to provide constructive feedback. The professional and expert feedback data was used to refine the initial item pool into the final pool of the 42-item scale. Application of these responses for final instrument creation will be discussed.

Predictors of Compassion Fatigue in Helping Professionals (Poster Presentation)
Jessica Lynn Suhadolink, Grace Keaveney, Nathaniel Olsen, and Morgan Pankey
Faculty Research Mentors: Kerry Schwanz and Melissa Paiva-Salisbury, Department of Psychology
Individuals in helping professions often experience compassion fatigue as a result of taking on the suffering of others. There is a need for more research regarding the preventative factors and self-care aspects that can be learned to help mitigate the effects of compassion fatigue. The goal of this study is to identify predictors of compassion fatigue in helping professions. We are working to pinpoint the predictors of compassion fatigue which include stress levels, self-care beliefs and behaviors. Participants completed the Perceived Stress Scale (PSS), Professional Quality of Life Survey (ProQOL), Self-Care Behaviors Scale (SC-Beh), and Self-Care Beliefs Scale (SC-Beliefs), which was created by the researchers. We surveyed over 300 people in helping professions, in order to examine the association of self-care behaviors, self-care beliefs and perceived stress to compassion fatigue. It is anticipated that the more stressed a person is, the less likely they are to engage in self-care behaviors and beliefs and they will experience more secondary traumatic stress. It is also anticipated that the less stressed a person is, the more likely they are to engage in self-care behaviors and beliefs and in turn deal with less burnout. Implications for prevention in professionals that take on helping others will be discussed.

Effects of Urbanization on Eutrophication Risk (Poster Presentation)
Ella Swantek
Faculty Research Mentor: Angelos Hannides, Department of Marine Science
Marshes and swashes are vital environments as a controlling barrier between land affected by various pollutants and the ocean. Eutrophication and the effects of this process can be detrimental for the areas experiencing it. I am interested in ways areas that have little contact with human interactions compare to areas that are heavily urbanized, and whether either of these locations is at a higher risk for eutrophication. Using spectrophotometry and fluorometry, I analyzed samples collected from the relatively undeveloped and restricted-access locations of Waities Island Beach and Dunn Sound monthly for dissolved nutrients, and chlorophyll. At the time of sampling, I also measured temperature, salinity and oxygen levels using a handheld device. These data were then compared to data collected from White Point Swash and Singleton Swash located in urbanized areas. Based on previous research done on this topic, the more urbanized locations should be more at risk for eutrophication due to their exposure to fertilizers and pesticides. At the time of abstract submission. I have data from July-December 2023 and I expect to be able to test my expectation with additional data from January-April 2024. My study will show whether urbanized marshes are more eutrophic than undeveloped marshes, the properties responsible for this, and what measures we can take to resolve this problem.

Nest Site Selection of Loggerhead Shrikes (Poster Presentation)
Mackenzie Tecco
Faculty Research Mentor: Chris Hill, Department of Biology

Exploring nest site preference in novel urban sites can allow insight into the effect of humans on avian species during nesting periods. Previous studies have shown that Loggerhead Shrikes nest at varying heights and in varying vegetation species, depending upon availability. Data for this study was collected from 2018-2023 in urban Horry County, South Carolina. Throughout the study, 250 nests were found, in contrast to past studies that have had fewer than 50 nests. Nests were located by observing courtship behavior or nesting behavior between Loggerhead Shrikes. Field technicians recorded 15 nest attributes at each nest site, including nest height, vegetation species, and coordinates of the nest. For each nest site, I chose two other available trees or woody shrubs within 50 meters for comparison. These points allowed me to sample trees and woody shrubs taller than 1.5 meters and within the near habitat of the used nest. Loggerhead Shrikes in this study nested in 23 species of trees and shrubs, but overwhelmingly in Live Oak trees (n=146, 58.4%). Of those Live Oaks, over 80% had been planted for landscaping rather than growing naturally.

Systematic Analysis of Bacteriophage Phayonce gene toxicity on host *Mycobacterium smegmatis* (Poster Presentation)

Kyla Thomas

Faculty Research Mentor: Daniel C Williams, Department of Biology

Due to their toxicity to bacterial hosts, bacteriophages are emerging as potential avenues in treating significant bacterial disease species. Systematic analysis of individual gene function on the host allows for an increased understanding of phage biology and discovery of possible therapeutic targets. This work aims to generate a gene library of the mycobacteriophage Phayonce in an inducible expression vector and analyze possible cytotoxic effects caused by overexpression of each gene in host cells. Each of Phayonce's 77 genes were amplified by PCR using gene specific primers, assembled into the pExTra plasmid, which contains a tetracycline inducible promoter for controlled expression of the phage gene. Each plasmid was verified by colony PCR and subsequent sequencing established that they are error-free. After verification, each pExTra clone harboring a different phage gene was transformed into the host, Mycobacterium smegmatis for phenotypic analysis to determine each gene's impact on host cytotoxicity. We identified a number of genes that reduce cell growth in a manner that ranges from a slight reduction in colony size to complete elimination of colony formation. One interesting cytotoxic gene is Phayonce 77, which has similarity to polynucleotide kinase that is involved in phosphorylation of nucleic acids. Further work is aimed toward determining interactions between Phayonce 77 and host proteins that will provide insight into the mechanism behind this gene's toxic impact on the host.

Determining the prevalence of Human Papilloma Virus in college students at Coastal Carolina University to determine the correlation between behaviors/attitudes and HPV presence. (Poster Presentation)

Rahjai G Thomas

Faculty Research Mentors: Paul E Richardson, Department of Chemistry, and Dr Fredanna McGough, Department of Public Health

Previously the Richardson lab had developed a method to collect tissue samples and effectively eliminate replicating viruses from the tissue sample leaving genomic material behind for testing. Furthermore, the lab had developed a test that could detected the E6/7 region of Human Papillomavirus (HPV) in vitro and in vivo. Building off of those discoveries this study monitored a small group of 20 student volunteers over a three- month period in which samples of the oral cavity were taken and analyzed monthly to determine the prevalence of HPV. A survey was also issued to provide insight to the participants behaviors and attitudes to help statistically determine what factors might be responsible for HPV presence in college aged students at Coastal Carolina University.

Performers to Politicians: How the Career Shift Can Make a Great Leader (Poster Presentation)
Grey Thompson
Faculty Research Mentor: Jordan Roberts, Department of Intelligence and Security Studies
This research paper aims to answer the question of, “Does being a performer affect one's ability in politics?” It does so by analyzing two performers-turned-presidents: Ronald Reagan and Volodymyr Zelenskyy. The research analyzes current literature on the two leaders and literature related to politics and performance. From there, it takes a deep dive into three Reagan films. Two films from his “prime” years in the industry and one from right before he joined politics. This goes hand-in-hand with the TV Series that Zelenskyy was in up until his presidency started. Then, a deep dive at policies during wartime—the Cold War for Reagan and the Russia-Ukraine War for Zelenskyy—determines how these policies are/are not affected by the two men being performers. The conclusion brings us to the understanding that being a performer does affect one's ability to be a politician. This is connected back to the performers' desire to be “loved” and “admired” by the audience. Which, for a president, is their country’s population.

Physiological Effects of Work-Recovery Ratio During Aerobic Exercise with Blood Flow Restriction (Poster Presentation)
Jake VanArsdale
Faculty Research Mentors: Justin Guilkey, and Jakob Lauver, Department of Kinesiology
Blood flow restriction (BFR) is a type of training that applies pressure to restrict blood flow during low-intensity aerobic exercise to create an environment that mimics higher intensities. Utilizing BFR at a low intensity (~20%-30% of VO2 max) can increase the ability to stimulate adaptations to improve aerobic endurance, fitness, and muscular strength and mass. This study is examining the effects of the work-recovery ratio during low-intensity exercise with BFR on the physiological and perceptual responses. This study has three experimental conditions: 4-minute work and 1-minute recovery intervals (4:1), 2-minute work and 1-minute recovery interval (2:1), and 1-minute work and 1-minute recovery (1:1). During each work interval, the work rate (WR) is 80% of their WR at ventilatory threshold and 20 watts during recovery. During work intervals, the cuffs were inflated to 80% of their limb occlusion pressure and deflated during recovery intervals. BFR cuffs are placed at the proximal end of the quadriceps on both legs. A near-infrared spectroscopy device is placed on the vastus lateralis to assess muscle oxygen saturation and a heart rate monitor is worn. After the protocol is completed, participants are asked to fill out a series of questionnaires to assess their affect and enjoyment during exercise and their intention to engage in similar activities. We anticipate that the physiological responses will not be different between work-recovery ratios, but the 2:1 condition will have a greater affect, enjoyment, and intention to exercise.

Investigation of flavor compounds in gluten-free beers (Poster Presentation)
Regan Verespie
Faculty Research Mentor: Drew Budner, Department of Chemistry
Gluten-free beers are found to have an unparalleled flavor profile due to different concentrations of several chemical compounds. Craft brewers take advantage of these unique flavors when creating gluten-free beer. However, little is known about the chemical origins of these flavors. This study includes the initial investigation of several compounds that are known to impact gluten-free beer flavor. A series of brews were done using barley, millet, or sorghum malt to help understand the concentrations coming from these grains. In addition, the influence of four yeast strains on chemical concentrations were

investigated. The flavor compounds were separated and tentatively identified using Solid Phase Microextraction with Gas Chromatography and mass spectral detection analysis.

Manga Creation: A Study in Visual Storytelling (Poster Presentation)
Christy Waters
Faculty Research Mentor: Yvette Arendt, Department of Visual Arts
In terms of academic exploration, the research found in this project diverges from traditional methodologies. Instead, it focuses on creative storytelling through the medium of manga. Over the course of eight weeks, I worked to create a fully completed one-shot manga centered around the theme of pursuing and evolving one's dreams. The narrative intentionally omits character names, encouraging reader identification and fostering self-insertion into the story.
Motivated by the widespread accessibility of manga, this project leveraged the medium's popularity to effectively communicate universal themes of aspiration and self-discovery. Notably, manga sales surged by 171% in the US between 2020 and 2021, which highlights its significance and relevance amongst today's readers.
Utilizing Clip Studio Paint, a prominent and well-rounded illustration program, this project underwent the various stages of manga creation. It encompassed concept development, storyboarding, line art and inking, grayscale illustration, and print formatting. The process not only honed technical artistic skills, but also provided insights into the intricacies of narrative structure and visual storytelling.
The culmination of this endeavor yielded tangible results in the form of physical manga copies, formatted for print and complete with specially designed covers. This aspect of the project shined a light on the complexities of book formatting and layout, complementing the creative process with practical publishing experience.
In an academic landscape dominated by empirical research, this project is a testament to the diverse avenues of inquiry and expression. By blending creativity with technical skill, the value of interdisciplinary exploration and innovation is showcased.

The Effects of Psychopathy and Empathetic Dilemmas on Moral Decisions (Poster Presentation)
Evan S. Welker
Faculty Research Mentor: Melissa Baker, Department of Psychology
The goal of the current study was to examine the relationship between college students' measures of psychopathy and their moral decisions. Specifically, I was interested in whether college students' measures of psychopathy would interact with an empathetic or non-empathetic moral dilemma task and influence their moral decisions on the task. Participants in the study were comprised of a college sample. First, participants completed the Leveson Self-Psychopathic Checklist (Leveson et al., 1995). Next, participants read a moral dilemma task. Participants were randomly presented with either an empathy eliciting dilemma (participants were asked to fire a co-worker who they knew was struggling financially) or a non-empathy eliciting dilemma (participants were unaware of the co-worker's financial situation). Participants were required to choose whether they would fire their co-worker or not. Based on previous research regarding the relationship between psychopathy and morality (e.g., Driessen et al., 2021; Marshall et al., 2018), I expect to find an interaction between psychopathy and moral dilemma on their decisions. For participants who score lower on the psychopathy scale, I expect that participants will be more likely to fire their co-worker under the non-empathetic moral dilemma condition compared to the empathetic condition. However, I do not expect to find the same effect of moral dilemma conditions on firing among participants who score higher on the psychopathy scale. Preliminary findings suggest

that overall, participants with higher levels of psychopathy, compared to participants with lower levels, are more likely to fire their co-worker across moral dilemma conditions.

Direct Impacts of Economic Sanctions on Terrorist Organizations (Oral Presentation)
Hampton West
Faculty Research Mentor: Matthew Cobb, Department of Intelligence and Security Studies
Economic sanctions are the most readily available, efficient countermeasure available to States against the threat of terrorism short of military operations. What this study seeks to observe is not only the economic and infrastructural impacts of the imposed sanctions, but the adaptative methods of terrorist organizations to curb these ramifications. In this study, I analyze the effects regarding group survival and group rate of attack success through quantitative variables and measurements. My theory suggests that the imposition of multilateral sanctions are much more effective than those of unilateral nature, as well as the idea that the imposition of sanctions can be directly attributed to a decrease in violent activity. This study will be conducted through an analytical evaluation of two African countries and the organizations operating inside of them, and the effects of economic sanctions on their systemic operations. Not only will I discuss the effects, but the methods by which terrorist organizations have evaded these methods and how governments may counter these actions.

The Impact of a Sports Nutrition Education Intervention on Sports Nutrition Knowledge (Poster Presentation)
Ashley Whalen
Faculty Research Mentors: K Michelle Singleton, and Jamie McAllister-Deitrick, Department of Kinesiology
Nutrition is an essential component to maintaining and enhancing athletic performance. It is imperative athletes have adequate energy intake to support optimal body function, fuel physical work, and facilitate repair and recovery. Previous research suggests collegiate athletes have poor sports nutrition knowledge (SNK), resulting in diets that are insufficient in total energy, macronutrients, micronutrients, and fluids. Therefore, the purpose of this study was to investigate the effects of a sports nutrition education intervention (SNEI) on SNK within Division I athletes. NCAA Division I women's (n=26) and men's (n=13) soccer players participated in the study during in-season training/matches. The intervention consisted of a detailed sports nutrition guide highlighting macronutrients, micronutrients, hydration, and supplementation. Athletes received the SNEI at baseline, as well as biweekly sports nutrition reminders throughout the season. Athletes completed a validated questionnaire to assess SNK pre- and post-intervention. Descriptive statistics revealed a baseline SNK score of 44.29 ± 12.86 (female, 44.25 ± 11.67; male, 44.33 ± 14.2) and post-SNK score of 45.05 ± 12.08 (female, 46.15 ± 11.33; male, 42.86 ± 13.65). Paired samples t-tests revealed no significant improvement in SNK post-SNEI ($p=.965$). A Mixed Model ANOVA revealed no significant differences between gender ($p=.821$) for pre- and post-SNK scores. The findings support previous research indicating collegiate athletes have inadequate SNK. Athletes would be expected to have an increase in SNK following an SNEI, however those in the current study did not show significant improvement. Future research should focus on the development and implementation of SNEI's to positively impact SNK.

Analysis and Identification of Timbers Found in Wadboo Creek, Charleston, SC (Oral Presentation)
Ethan J Whiten
Faculty Research Mentor: Sara Rich, HTC Honors Department
The Wadboo Creek site consists of three timbers from an unidentified shipwreck that has yet to be mapped or reported by SCIAA or any other archeological organization. The timber lay on a hard marl

bottom and are tied together by a singular piece of rope to avoid separation of the pieces by an independent archeologist and wreck advocate upon first discovery. These timbers are a crucial part to identifying the origins of this wreck whether it is a professionally built ship from a shipyard in the Charleston area or a locally built ship using scavenged or wood the builder sourced themselves. Through this report each step of the project is laid out in detail from the first dives on the timbers to the final analysis and identification of the timbers determining if the wreck is professionally built or locally built. A photogrammetry model for each timber has also been developed so the model can be analysis without the timbers being physically present in a laboratory. This project also molds into a larger project that is currently being worked on by the same researcher. This project could allow the wreck to gain state protection and have further research done on it.

Ontogenetic Changes in Trophic Level of White and Brown Shrimp in the Winyah Estuary, SC (Poster Presentation)

Kayleigh Wolstenholme

Faculty Research Mentor: Ryan Rezek, Department of Marine Science

The White shrimp (*Litopenaeus setiferus*) and Brown shrimp (*Farfantepenaeus aztecus*), both classified as Penaeid shrimp, are a valuable asset to private and commercial fisheries and ecologically important as a key prey species to large fish and other aquatic animals in Winyah Estuary, SC. Having a greater understanding of this species' dietary habits, how they might change ontogenically, and how variation in diet may affect shrimp vitality, is important for identifying how environmental shifts may affect their populations. The focus of the study is to characterize the variations in the contribution of primary producers (plant/detrital) versus animals to their diet and further investigate how diet might affect their relative condition index (Kn). Stable isotope analysis of nitrogen (δ15N values) of shrimp and primary producers were used to determine the changes in trophic level in various sizes of both White and Brown shrimp. The samples were collected from mid estuarine sites (Winyah Bay) and lower estuarine sites (North Inlet and Winyah Bay Mouth). From weight-length relationship data, the Kn was calculated from all the sampled shrimp. Trophic level was found to have a positive relationship with the standard length of the Brown shrimp, but not White. Brown shrimps were found to have a higher trophic level in the mid estuary, but no spatial differences were found in White shrimp. Condition was not found to be related to trophic level. These data highlight fluctuation in food sources used by Penaeid shrimp, providing further insight into shrimp dietary composition in the estuarine system.

Optimizing Virtual Design to Enhance the Virtual User Experience - Virtual Shikoku Pilgrimage Project Case Study (Poster Presentation)

Samantha Zeh

Faculty Research Mentor: Susan Bergeron, Department of Anthropology and Geography

This poster focuses on the design process for developing the user experience of the virtual Shikoku Pilgrimage immersive platform, specifically analyzing the first three temples as a case study. The aim is to capture the pilgrimage's inclusive nature, ensuring the virtual rendition appeals to users of all backgrounds and beliefs. The main aspect of this project is analyzing the challenge of selecting specific elements from temples one through three that best represent the essence of the pilgrimage while working within technological limits to deliver the most authentic user experience. Determining which parts of the design aspect to include in the platform that will allow users to have an equally immersive and emotional experience is challenging when working with technological constraints. This poster will break this process down, and with the addition of the quantitative analysis, the findings will contribute to the development of accessible and engaging virtual experiences that cater to diverse audiences and enhance the understanding of the Shikoku Pilgrimage. This project employs a mixed-method approach,

combining a qualitative analysis of the chosen temples with a quantitative analysis of the logistical aspects of the pilgrimage, such as a comparative analysis of walking versus cycling as a mode of transportation between temples. This blended perspective aids in the understanding of how different modes of transportation affect the overall user experience. The project highlights the importance of replicating the pilgrimage's inclusivity in the virtual domain, ensuring the platform accommodates users' varying motivations and physical capabilities.