

**UNIVERSITY *of* WEST FLORIDA**

---

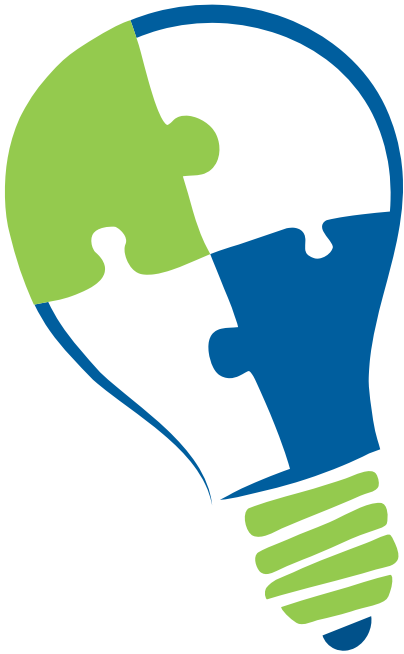
**STUDENT SCHOLARS  
SYMPOSIUM**

---

**AND FACULTY RESEARCH SHOWCASE**

**2020**

**Event Program**



**UNIVERSITY *of* WEST FLORIDA**

---

**STUDENT SCHOLARS  
SYMPOSIUM**

---

**AND FACULTY RESEARCH SHOWCASE**

**Programs & Abstracts**

**April 16, 2020**

**Allison Beauregard Schwartz, Ph.D.**

*Director, Office of Undergraduate Research*

**DESIGNER**

**Grace Resendez McCaffery**

**EVENT ORGANIZED BY**

*Office of Undergraduate Research*

**We gratefully acknowledge the faculty who review proposals and serve on the advisory board for the Office of Undergraduate Research. We also gratefully acknowledge the students, faculty, and staff who have contributed to the organization and have volunteered their time to hosting this symposium.**

**Special Note on 2020 Symposium:**

Due to the Covid-19 pandemic in the Spring 2020 semester, the UWF Student Scholars Symposium and Faculty Research Showcase could not be held as originally planned on campus on April 16, 2020. Instead, the event was reformatted into a virtual celebration of UWF research on OUR's social media platforms. Prior to this shift to the online format, many UWF students worked very hard to submit abstracts of their planned presentations; these abstracts went through an approval process with their faculty mentors. This program serves as documentation of submissions and includes the students/presentations that were formally approved for the original Symposium.

Please note that some students who did submit abstracts/presentations are not included in this publication for a variety of reasons, e.g. their faculty mentors did not approve them in time for publication. OUR also recognizes that some students participated in the virtual Symposium without ever submitting any documentation to the planned physical Symposium. If you have any questions regarding participation in the Symposium (either the planned physical event or the virtual event), OUR encourages you to please contact either the faculty mentor or OUR ([our@uwf.edu](mailto:our@uwf.edu)).

---

# TABLE OF CONTENTS

---

## **Presentation Titles and Information**

**Organized by college and department, alphabetized by first author**

**Presentation type included with each listing**

### **College of Arts, Humanities and Social Sciences**

- P. 2 Anthropology & Archeology
- P. 5 Art & Design
- P. 9 Communication
- P. 10 English
- P. 14 Government
- P. 15 History
- P. 22 Music
- P. 24 Philosophy
- P. 24 Women's, Gender and Sexuality Studies

### **College of Business**

- P. 24 Accounting & Finance
- P. 25 Global Hospitality & Tourism Management
- P. 25 Management & MIS
- P. 25 Marketing, Supply Chain Logistics & Economics
- P. 26 MBA Program

### **College of Education and Professional Studies**

- P. 26 Administration & Law
- P. 27 Criminology & Criminal Justice
- P. 28 Educational Research & Administration
- P. 29 Instructional Design & Technology
- P. 29 Social Work

### **Hall Marcus College of Science and Engineering**

- P. 30 Biology
- P. 46 Chemistry
- P. 51 Computer Science
- P. 53 Earth & Environmental Sciences
- P. 58 Electrical & Computer Engineering
- P. 59 Information Technology
- P. 60 Mathematics & Statistics
- P. 61 Mechanical Engineering
- P. 66 Physics

### **Usha Kundu, MD College of Health**

- P. 68 Health Sciences & Administration
- P. 68 Medical Laboratory Sciences
- P. 68 Movement Sciences & Health
- P. 72 Psychology
- P. 79 Public Health
- P. 80 School of Nursing

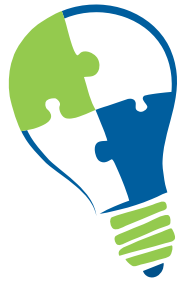
### **Other Programs**

- P. 81 Kugelman Honors Program
- P. 87 Study Abroad

### **Index**

- P. 88 Author & Faculty Index

# COLLEGE OF ARTS, HUMANITIES AND SOCIAL SCIENCES



## ANTHROPOLOGY & ARCHEOLOGY

**Jenni Baggett**

***Beyond the Mound: Interpreting the Manly Mound Site***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Although archaeologists have established a general timeline for precontact occupation in northwest Florida, Native American mounds remain significantly understudied. The limited quantity of surviving mounds along the Gulf Coast and the ethical and legal constraints on excavating indigenous burials results in a fundamentally misunderstood element of the region's history. Early inhabitants settled along coastal areas, exploiting natural resources for subsistence and trade. Mound construction began during the Middle Woodland Period (AD 200 – AD 800) and continued throughout the Mississippian Stage (AD 1250 – AD 1450). One such site, Manly Mound is located along the coastline of the Naval Live Oaks Reservation. The site remains fully unexcavated as a pristine remnant of the peoples who inhabited the area 600 to 1,800 years ago. Because the site has never been excavated, the narrative of prehistoric occupation of the region remains incomplete. Through systematic archaeological survey of the mound's surrounding landscape, the project will determine the time periods associated with the mound, its overall function, and the relationship of the mound to nearby sites. This project supports an ongoing undertaking by the National Park Service and the University of West Florida, under the direction of Dr. Ramie Gougeon, and will provide a comprehensive overview of Manly Mound while simultaneously preserving the mound's integrity. The conclusions of this research will contribute to our understanding of the social organization, cultural practices, and occupational timeline of northwest Florida's indigenous inhabitants.

**Kate Ganas**

***A Case for the Corpus Cristi: New Insights on the Luna Shipwrecks***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

One of the first colonization attempts in Florida began with the Spanish expedition of Tristán de Luna in 1559. A total of 12 ships and 1500 colonists left Mexico on June 23, 1559, and arrived in modern-day Pensacola Bay in early August. A month later, on September 19, a hurricane destroyed 7 of the ships, decimating the colony. While multiple relief expeditions attempted to aid the struggling colony, it was abandoned in 1562 and the shipwrecks were forgotten.

**Anthropology**

**Brenna Harshman**

***The Violence Comes Soon After: LGBTQ+ Perceptions of Safety and its Effects On Mental Health In Pensacola***

Faculty Mentor(s): Meredith Marten, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

I will present primary data on how stressors affect the perception of safety among the LGBTQ+ community in the Pensacola area as well as the mental health consequences linked with this stress. Data were gathered through participant observation and semi-structured interviews. Pensacola is a part of the widely conservative South, though the Pensacola community has long demonstrated a tolerant attitude toward LGBTQ+ visitors and residents. Still, there are many conservative residents who object to the presence of LGBTQ+ members in the community. Due to the outward display of intolerant behavior, many LGBTQ+ people question their ability to safely express their sexual orientation and gender identity. As in the rest of the USA, we hypothesize that the LGBTQ+ community in Pensacola is more likely to have poor mental health and this inequity is linked to social stigma and discrimination.

**Anthropology**

**Stephanie Hartley**

***A Hierarchy of Expert Performance as Applied to Forensic Anthropology***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Anthropologists have aimed to make the social scientific practices as rigorous (i.e., purely objective) as that of the natural sciences. In forensic anthropology, there has been consistent debate over methodology, reliability, and standardization to adhere to the systematic and objective rigor required for courtroom testimony, including legal regulations put in place in order to check and verify the reliability of expert testimony (e.g., Daubert v. Merrell Dow Pharmaceuticals, Inc., 1993; General Electric Co. v. Joiner, 1997). There has also been a major push to investigate the reliability and biasability of experts in the forensic sciences. In order to better comprehend the relationship between objectivity and subjectivity of forensic work, scientists must first understand the systemic effects that the person performing the analysis has on both the observations and conclusions made. Like in all disciplines, forensic anthropological analyses incorporate an element of subjectivity. The investigation and subsequent mitigation of these error risks must be conducted

**Anthropology**

through quality assurance assessments and policies. This study aims to act as a framework for understanding expertise in forensic anthropology, and to potentially enable further research into the assessments of expert analysis in this field. This study will take a critical look at the anthropologist as a factor in evidence collection, not only their observations and the subsequent analyses but also the conclusions based on these observations. This will be done in order for forensic anthropology as a discipline to conduct reliable scientific analyses that stand up in the courtroom and in the laboratory.

**Justin Milewski**

**Anthropology**

***Proposed Thesis Work on the Emanuel Point III Shipwreck Site***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Archaeologists discovered EPIII during a summer field school in 2016. Students were target diving on a magnetometer anomaly in the bay and found a ballast stone, 16th-century ceramics, and wood. This discovery led to the University of West Florida (UWF) acquiring a permit to temporarily dredge the site, opening a 1x1 meter unit that revealed a section of articulated wooden ship structure believed to be associated with the sunken Luna fleet. Students at UWF have conducted further excavation of EPIII since 2016, uncovering 11 sq. meters of semi-articulated ship structure including various timbers and hull planking. Questions asked when faced with the problem of unidentified ship structure near the previously discovered Emanuel Point shipwrecks include: Does this ship belong to the Luna Fleet? Is this a larger section of a ship like the other two Emanuel Point ships, or a smaller section? Once these questions are answered, follow up questions include: what component of the ship might this be? Is this a separate shipwreck or part of one of the previously located ships? If this is a new ship, is there a way to identify the type and name of the ship? By further excavating the site, conducting an examination of the structure that is present through extensive measurement, and analyzing this structure as it compares to other contemporary 16th century Spanish shipwrecks, I will answer these questions.

**Erin Penning**

**Anthropology**

***Peckuliar Analysis: Ancient DNA Extraction from Archaeological Chicken Finds Pt. 2***

Faculty Mentor(s): John Bratten, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

In 1559, Tristan de Luna y Arellano began his attempt to establish a colony in what is now Pensacola, FL. However, after a devastating hurricane destroyed seven of his ships and the supplies onboard, the colonists only managed to survive at the settlement for just two years before eventually being evacuated by their countrymen. Left behind in Pensacola were the shipwrecks and whatever remained trapped inside. Over 460 years later, archaeologists have found three of the shipwrecks and the supplies they help with them, including various types of faunal remains. Do these bones still have more to offer us than just simply what type of meats the colonists were eating? Previous research determined that the best way to extract ancient DNA from waterlogged chicken bones retrieved from the shipwrecks. Both silica suspension and phenol-chloroform extraction methods were performed, the latter technique being the most efficient. The

phenol-chloroform extraction method is now being applied to other species found at the sites including rats and sheep/goat. To ensure the best results, protocols for the chicken bones have been repeated on additional samples from the Emanuel Point shipwrecks before all were prepared for DNA quantification. Nano-drop quantification and gel electrophoresis suggest viable DNA has been recovered from the chicken bones and the samples can be cleaned and then prepared for sequencing to determine whether the DNA found is chicken or bacterial. Ultimately, the isolation of DNA from these specimens will provide data related to early animal domestication in the New World.

**Enrique Plasencia**

**Anthropology**

***Forensic Identification of Undocumented Migrants at the United States - Mexico Border***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Violence plays a central role in the practice of immigration enforcement throughout the United States, even in a time when the American people have become members of a globalized society that extends beyond physical borders, and the identities of so many of us are shaped by cosmopolitanism and the dream of a future when all peoples of this world may come together to form a single community based on shared morality, not just shared political interests. Due to the militarization of the border, immigrants to the US have found themselves forced to attempt border crossings through more rural and dangerous regions, such as southern Arizona's remote and notoriously inhospitable deserts and mountains, and the perilous Rio Grande, resulting in the deaths of countless individuals. In this thesis, I explore new ways for anthropologists to help undocumented border crossers and their loved ones. More specifically, I seek to analyze the remains of deceased undocumented border crossers found throughout the Sonoran Desert for potential skeletal identifiers that may indicate whether or not the remains actually belong to a UBC, and if so, what is their country of origin. Moreover, my research focuses on skeletal indicators of stress that could become components of the biocultural profile of undocumented migrants in the southern United States.

**Preya Ramey**

**Anthropology**

***Investigating Campus Autism Assistance Programs from the Student Perspective***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

This study will investigate campus autism spectrum disorder (ASD) assistance programs from the perspective of university students. I plan to investigate the firsthand experiences of these programs from students who are directly involved with them. Additionally, I will also examine the secondhand experiences of these programs by interviewing individuals who are knowledgeable of these programs and their integration, but who are not directly involved (e.g. professors, faculty and peers). These accounts may provide insight into the current functioning of ASD assistance programs. This study could potentially open discussions on how ASD assistance programs can be improved in the university setting.

**Rhiannon Rice****Anthropology*****Cannibalism in Early American Borderlands: A Look at the Ritual Use of Human Remains in Cannibalistic Tribal Practices***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: Anthropology

Session: Main Poster Session

Cannibalism is a topic that is interesting and makes observers question the morals of its practitioners. Early contact with the Americas was cause for both fear and fascination with the Europeans, whose accounts of these interactions are used to inform the rest of their society. From Columbus' claims of battling fearsome cannibals in the Bahamas, to De Lery's cannibalistic allies in Brazil we can observe initial interactions with early American borderlands cannibalistic traditions. Using these accounts to observe and analyze cannibalism in early America, we can recognize the patterns in cannibalistic behavior as well as see outliers that practice cannibalism in unique ways. Ritualistic use of human remains as a means of honor, wartime traditional cannibalism, and moral questions surrounding the ritualistic practice of cannibalism according to European adventurers. Cannibalism could be practiced as a means of obtaining power, or providing tribute to a deity by some tribes. Others may use cannibalism as a way to dehumanize enemies, or to keep deceased loved ones from being dishonored by ground burials that treat humans like animals. I aim to provide a multiscalar view of cannibalism and its many forms in the early Americas while also attempting to give insight into the European societal moral problems with cannibalism.

**Patrick Rother****Anthropology*****Innovations and Tactics of the Roman Army and Navy*****Co-Author(s): Steve Shippee**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Anthropology

Session: Main Poster Session

The Roman Army and Navy experienced a long series of changing events throughout history, leading to the development of unique and successful strategies to combat their enemies. The Army of Rome was based on a fundamental unit, called a Cohort, the implementation of which could be adjusted by the battlefield commander to meet the needs of the day. Thus, one of the Army's most useful characteristics was its adaptability. Similarly, the Roman Navy, though not as secure in composition, was equally as adaptable. It shrank and grew with changes in need. In a pinch, Rome might leverage the shipmasters of her extensive trade networks to provide ships. And in the long-term, Rome's massive industrial capability could be employed to splash hundreds of vessels a year. Thus, despite a low overall aptitude for sea warfare, Rome was successful in that she could field more vessels than her enemies. As well, the Army and Navy were fundamentally interlinked, especially when Rome's aspirations began to extend beyond the Italian Peninsula. Neither organization could hope to achieve success without the other. The Navy was relied upon to ferry troops across large Mediterranean expanses and keep supply lines open to extended armies. And in battle, the Navy coopted tactics (such as infantry fighting and the use of the corvus) developed by its land-born counterpart. All told, the Roman Army and Navy were very much the same entity, in the way

that one extended influence into the other, and both worked closely to achieve Roman goals.

**Tiffany Santiago****Anthropology*****Paleopathology of Migrants in "Las Sepulturas" (CV-36) at Copán Ruins in Honduras***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Copan was a great Mesoamerican Prehistoric Maya urban center that begins with its' first ruler K'inich Yax K'uk' Mo' in AD 426 and ended with its' sixteenth ruler, Yax Pasaj Chan Yopaat, in AD 820. Archaeology at Copan has been ongoing since the 1890s with the excavations revealing evidence for a variety of different topics. Most importantly, there has been evidence found of migrants at Copan. The focus of migrants has not been a widely studied subject at Copan especially when it comes to health. In order to study migrants, though the separation of 'locals' and 'nonlocals' must first be made through the use of strontium isotopes (87Sr/86Sr). The use of strontium isotopes (87Sr/86Sr) would then show the general area that the individual went through adolescent in which then can be compared to their place at death. Thus, this project seeks to explore a neighborhood known as "Las Sepulturas" (CV-36) to identify the 'nonlocal' individuals and to look at both the 'local' and 'nonlocal' individuals through their material culture and paleopathology in order determine if there is a difference in the health and disease of 'nonlocals' versus 'locals.' Before looking if these differences can be explained in terms of migration experiences such as commonalities in disease and places that migrants are coming from or if Copan 'nonlocals' and 'locals' having the same diseases.

**Mark Vadas****Anthropology*****How Did You Not Learn That?: A look At Archaeological Field Schools Across the United States Of America***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Archaeology programs both in and outside of the university system vary greatly across the country. Some universities require and offer archaeological field schools. Others require field school but do not offer any within their program. Several do not require a field school to graduate. Not only do programs differ, but offered field schools vary in focus (e.g. terrestrial, underwater, combined, prehistoric, historic). The times involved in field schools can also range from as little as two weeks to greater than ten weeks. Within this ocean of variety, what works the best to impart pertinent skills and knowledge to students? What does not work? There is no agreed-upon baseline for what skills students should learn from a field school and no agreed-upon length for how long it takes students to feel competent in the new skills that they are mastering. To answer these questions I will be creating surveys for professional archaeologists to complete on what they are looking for in new hires and what skills they were lacking when they graduated. I will also be researching how the archaeological projects themselves dictate what skills can be learned and also look at all offered field schools in the country to compare both length and focus of offered field schools.



**Taylor Walkup****Anthropology*****More than a Flesh Wound: 'Weathering' as Skeletal Markers of Structural Violence***

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

Structural violence—the “social arrangements that put individuals and populations in harm’s way” (Farmer 2006)—accounts for the brutal experiences of migrants working in California’s berry farms, and the systematic lack of water delivery infrastructure to rural black communities in South Africa. Although these more discreet, insidious forms of structural violence are not as visually arresting as physical violence, they are just as theoretically salient to discuss within violence as a phenomenon. The targeted ways in which violence is embodied is profound and varied thus, it is imperative to ask how the effects of structural violence present skeletally on different populations, especially the vulnerable: the poor and non-white. Violence imposition can be analyzed through “weathering” (Geronimus 2006), or the skeletal appearance of premature aging, despite the individual not actually being that old at the time of death. Structural violence, therefore, may “weather down” individuals through mental and physical ramifications of structurally violent realities: lack of access to basic needs (food, clean water) and medical services verbal abuse; and abject poverty. In this research, I will be analyzing skeletal markers of “weathering”—tooth loss, degenerative diseases—as well as conducting common age estimation methods, including the Suchey-Brooks pubic symphysis method and sternal rib end aging in a skeletal population of differing socio-economic status individuals in which their age was recorded at death. If individuals of lower socio-economic status appear “older” due to weathering induced by lifetime patterns of structural violence, this could have vital implications for forensic anthropological aging and identification methods.

**Judith Wells****Anthropology*****Multigenerational Loss of Muscogee/Creek Cultural Identity after the Indian***

Removal Act of 1830: How the Past Impacts Today.

Faculty Mentor(s): Gregory Cook, Anthropology

Lead Author Department: Anthropology

Session: Main Poster Session

The general topic of my thesis examines the multigenerational effect of the loss of cultural identity among Native American due to structural violence during and after the Indian Removal Act of 1830. Cultural identity is described as the feeling of belonging to a group with all its traditions, heritage, ancestry, thought processes and social structures. It is a key part of a person’s conception and perception of self. Loss of cultural identity, no matter how it occurs, has profound implications for the physical, social and psychological well-being of the person and his/her descendants. When this loss occurs as a result of structural violence, i.e. community or government sanctioned activities aimed at denying a particular group of people basic human rights, the multigenerational effects are amplified. This thesis explores more precisely the post-Removal period in the Southeast, concentrating mainly on the descendants of Muscogee/Creek people in northwest Florida and nearby Alabama. Utilizing available historical and community resources, with particular attention to archival material in several regional Creek

heritage centers, I will show how Removal affected those left behind, forcing them to hide from authorities and eventually renounce their Creek citizenship and heritage in order to survive. Subsequent generations used these tactics and others to hide their Creek ancestry to avoid racism and discrimination. Finally, interviews with local Creek descendants of those left behind demonstrate how the loss of their cultural identity affected their ancestors and still affects their lives today.

**ART & DESIGN****Alexander Adcock****Art and Design*****Synesthetic*****Co-Author(s): Nate McManus**

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

The human body is designed to be active within space, and as such, relies on a network of bodily senses to orient itself within these spaces. Technology advances, but it’s function almost always serves to extend these human senses or experiences. The purpose of this project is to discuss and illustrate this relationship between bodily senses and technology experientially by providing viewers with a platform to experiment with these concepts via activating a sculpture physically to elicit a visual and auditory response. The sculpture contains two elements: a constructed “instrument” sculpture and a “projection loop”, which is a series of infinitely self-containing video feeds that are created by focusing a camera on the projection into which it’s feeding. A participant activates the sculpture by strumming or plucking the strings of the sculpture, which creates a desired tone while also feeding a set of stimulus data into a program called VVV that alters a series of color filters applied to the projection loop. In our research, we found VVV to be the most accessible and modular coding software we could use for this application. The interactive nature of this installation is intended to create an active awareness of “stimuli and response” within the viewer. The sculptures contain recognizable devices that are used to highlight the temporal quality of these technologies. This in turn brings focus to the position of these technologies in our lives. The intention is to stimulate conversation and collaboration, and the devices function to allow viewers to draw

**Brooke Bosso****Art and Design*****The Gaze***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

“The Gaze” has been a topic of study for many years and portrayed by artists for centuries. Laura Mulvey, a film theorist, describes the female gaze as a piece of art or some art form that comes from the point of view of women. However, there have been many interpretations of what the female gaze is. For example, how women view other women, the viewpoint of women in a work of art, women expressing experiences to encourage others to do the same. Although the topic seems broad, it gives the opportunity to allow artists to express their

own understanding of what it means to them. For my project on the female gaze I planned to paint women who have in some way affected my life. But after further research into this subject, and more into the history of female artists, I have come to learn that for centuries most female artists would not have been successful if they had not been supported. Support was the key to many women artist's success and therefore, the more appropriate response to this idea is to paint women who have supported me and my work. With so many different ideas as to what the female gaze is, it is important to continue to research this topic. Women artists have come such a long way in history to continue to express our experiences and support one another while questioning what the female gaze is will allow the idea to progress throughout time.

### **Buu-Tran Duong**

**Art and Design**

#### ***UWF Comic Club – Comic Anthology Research***

Faculty Mentor(s): Kevin Scott, English

Lead Author Department: Art and Design

Session: Visual Art Exhibit

Comic making is an extremely niche field. With the rise of Marvel and DC movies and “nerd/geek” culture, a community of not just consumers, but also creators of comics and creative graphical stories are coming out. They are here at UWF too. There is a growing community of artists on campus that are story creators or people wanting to see their story brought into a graphic novel or comic form, and UWF needs to feature more student created work. Our faculty advisor Dr. Kevin Scott has spent years studying the engagement and theory of comics and teaches a course at the University of West Florida called “Comics and Culture”. The UWF Comic Club has more than 20 active students creating their original comics to be put together into UWF's first comic anthology series to be distributed around campus, and we are using the 2020 Spring UWF Comics and Culture course as a test pool on how to improve the anthology series for next year.

### **Madison Heinze**

**Art and Design**

#### ***Looming Anxiety***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

In this art installation, my primary focus was on mental health, fear and anxiety. The mind is a powerful tool and when it spirals out of balance, our perceptions of reality can be affected dramatically. It is suggested “that increments in fear can produce significant perceptual distortions”. Our brains are naturally drawn to pattern and repetition, favoring routine, and creating habits, even detrimental ones. Anxiety is defined as the intense, excessive, and persistent worry and fear about everyday situations. Although it is normal to experience anxiety in the day-to-day, it can become an all-consuming problem, interfering with daily life. It can be said that an anxious sufferer has a heightened sense of looming vulnerability to harm, becoming more anxious and threatened in effect. My goal was to create a piece which lives in a realm of discomfort and mirrors the effects of anxiety, presenting a distorted reality which the mind can so easily conceive by showcasing imagery that borders on the surreal, not quite reality or fantasy. My final installation included a triptych of three mixed-media paintings and a sculpture that hung over the audience, creating an immersive environment.

### **Rachel Hiers**

**Art and Design**

#### ***Back to the beginning, the Camera Obscura that led to Pinhole Photography***

Faculty Mentor(s): Jim Jipson, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

The goal of this project is to create ten (10) framed (4 x 5 inch) pinhole photographs of landscapes. Support from the OUR Grant has been used to purchase a pinhole camera with a fixed aperture, film, paper, and frames to produce the final images. This project focuses on the research of the optical device that preceded photography called Camera Obscura. My objective in this investigation is to expand my photographic skill set while working with one of the first inventions of photographic history. The formal methods I will employ are perspective, scale, time, and space. I will create abstractions from the soft focus and movement that may occur on the images. I am focusing on concepts of time in nature and manipulating organic forms through the pinhole. So far my research has been a lot of trial and error. You must have a lot of patience when dealing with the process and have to be willing to experiment. I'm learning how to read light and figuring out more successful times of day to create images. Lighting that is even is important and if there are shadows or clouds, the images will take much longer to be exposed. I wouldn't say there are exact set times for exposures. There are so many factors that play into each image. The research is still ongoing and I look forward to the final images.

### **Ali Houghton**

**Art and Design**

#### ***Opposing Figures- Sculpture Series***

Faculty Mentor(s): Valerie George, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

The objective of my research is to investigate ways to represent the human figure and to push the perceived abilities of my materials, metal, and fabric, through the creation of a series of metal and fabric sculptures. The OUR funded project, Opposing Figures, investigates two major concepts. First, this series investigates how to represent cultural archetypes and the human condition through the subject of the human figure. My second investigation involves materiality, blending and exploring the boundaries of steel and fabric by making the one medium mimic the other's characteristics. For example, I will make steel look lightweight while making fabric appear weighty. The series consists of three figural sculptures. The first sculpture will be a figure made from steel rod with the intention to appear light and weightless. The second figural sculpture will be constructed of fabric with the intention to seem heavier than it is in reality. The final sculpture will be a figure made of a combination of steel rod and fabric, investigating the idea of blending these materials as seamlessly as possible. I seek to follow in the footsteps of other fabric and metal artists, specifically Antony Gormley and El Anatsui, and combine the ideas of Gormley's unconventional ways to represent a figure and Anatsui's ability to make his material appear contrary to its inherent properties. With the completion of this project, I hope to add to the progression of sculpture by using opposing materials in untraditional ways to represent the figure.



**Jonathan Kattine****Art and Design*****Roman Arts Influence on Byzantine Art***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

My Office of Undergraduate Research project was designed around a collaborative project with Ethan Bemby for the Daily Life in Ancient Rome Symposium here at UWF. This project and my OUR grant are concerned with the transition of styles from late Roman or early Byzantine paintings to what is now known as the Byzantine icon style. My project and the subject of my OUR grant is to recreate an icon painting consisting of both Roman and Byzantine formal and aesthetic qualities. Every decision was made with consideration concerning Roman beliefs alongside early Christian beliefs to create a theoretical work of art. One possible reason no examples showing this transition exists today is that during the Byzantine iconoclasm, all early icons were destroyed. Through the process of recreation, I was forced to try new techniques and mediums. Strictly using materials from the time, I used 24-karat gold leaf to gild the background and used hand-mixed egg tempera paint from natural earth pigments, on a rabbit skin gesso board prepared in accordance with tradition. Through this process, I faced challenges with gilding and especially with the egg tempera painting. However, through several trial-and-error sessions, I was able to obtain a substantial result. Through my own experience facing the difficulties of depicting a non-traditional icon portrait of a beardless Christ with the medium and materials of the time, I speculate why the artist moved towards a more formulaic style: to recreate the icons more quickly.

**Manrong Li****Art and Design*****The Theory and Methods about La Peche Chinoise***

Faculty Mentor(s): Justin Sturgeon, Art and Design

Lead Author Department: Art and Design

Session: Main Oral Presentation Session

François Boucher's *Le Pêche chinoise*; François Boucher's *Le Pêche chinoise* (The Chinese Fishing) has long been admired for its chinoise style. Here the lazy and comfortable characters and setting are perfectly suited to the Rococo atmosphere. Yet the artist used his imagination and exaggerated forms to create a work that is not truly reflective of Chinese culture, but rather is based on a decidedly eighteenth-century western perception of the Oriental "other". The hairstyles and headgear of the characters, their clothing, the form of the fishing boat, and the surrounding background all reveal the artist's exaggerated perception of the "Chinese aesthetic". The color of the entire painting is also weighted towards the blues and finishing touch of red tones commonly used in Chinese ink painting. The artist has abandoned western perspective systems, instead depicting mountains and rivers simultaneously far and near in an attempt to mimic the aesthetic of Chinese ink paintings. The artist's choice of subject matter and specific details within the work further reveal that the work is based more in the western Rococo spirit of exaggerated pleasure and interest in exotic charm. In the end, by examining the work through the lenses of iconography and Orientalism/post-colonial theory I will reveal that the work leaves the viewer with a sense of the charm of the Orient, but in the end is an unfulfilling charm based on a perceived fantasy.

**Jose Molina****Art and Design*****An Exploration of Nontraditional Pigments in The Field of Oil Paint***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

The objective of this research is to explore nontraditional pigments in the field of oil painting in order to create artworks with a contemporary aesthetic. There are many brands of oil paint commercially available in a variety of colors however Luminescent and pearl effect colors of any kind are completely unavailable. These colors are commercially available in other types of paint utilized by fine artists such as acrylic, or watercolor but have been completely omitted from oil paintings. I intend to make my own oil paint in a variety of nontraditional colors and that possess different visual effects. I will make use of commercially available pigment powders that have not traditionally been incorporated into oil paint. Most traditional oil paint consists of three basic ingredients linseed oil, bee's wax, and a ground pigment traditionally made of a mineral. I will use a traditional recipe but substitute pigment made from synthetic materials that would not traditionally be used to make oil paints in order to achieve luminescent colors, pearl, and metal effects. At the end of my research I will have three unique completed paintings that make use of traditional oil paints and my custom paint mixtures. I will maintain a detailed process book throughout the project with photos notes and recipes. I believe that this project would fit my painting style and could forward not only my practice but that of my peers.

**Nicole Morse****Art and Design*****Absorb and Repel: Layers in Watercolor***

Faculty Mentor(s): Gregory Saunders, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

My objective for this research is to experiment with the absorption of watercolor on various, cut layers of watercolor paper and foam. This will create different textures and effects in the artwork because foam repels water, which pools around the grainy foam layers and leaves the pigment behind as it dries. On the other hand, watercolor paper absorbs the watercolor pigment with more accuracy and smoother washes. Although contrasting, these aspects of the painting will help convey the parts of the painting they represent. The overall design of the artwork is based on some roots and flora from the banks along the Edwin Ball Nature Trail on UWF campus. The roots will be emphasized by the textured, carved, surface of the foam, and the water in the picture will be painted mostly on the smooth watercolor paper. Other parts like the boards of the boardwalk and some large sticks will be on the paper from the foam board which will hold some water, but not as cleanly. These parts and layers of the artwork help show some of the elements of the UWF ground. The concepts of the painting (absorb and repel) seem to parallel the textured roots, dry land, and cracked leaves with the water and mud that moves, soaks and evaporates in our own UWF environment.

**Sean O'Hern****Art and Design*****Looking at the Present through the Lens of the Past***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

I am researching the visual culture of the present and the past. By looking at the present world through the lens of the past, in this case a camera, we can find a common visual ground to understand the past and then see how the world has changed and how it has stayed the same. By exploring and capturing aspects of the modern world with old camera equipment I hope to achieve a new understanding of the past and present. I am scouting out my local surroundings and photographing what I find speaks of the time in which we live. I am using a large format camera and black and white film to capture my images that I will print at 11" x 14" on photographic paper. Additionally, I am recording information about each shot as a learning tool and companion documentation for the photos.

**Alyssa Perez**

**Art and Design**

***Receipts and Raw Clay***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

As an artist that recognizes the problem of receipts, I created a raw clay sculpture that appreciates Earth for its natural resources while raising awareness about daily contact with toxic and carcinogenic receipts. I began my project by researching the negative effects of thermal paper in our environment. I discovered that thermal paper receipts are typically not recyclable due to BPA. And receipts pose a threat to our health through industrial chemicals. Paper receipts are also consuming roughly 80,000 to 160,000 trees in just one day. In addition to deforestation the paper making process contributes to air and water pollution. For my sculpture I used a universal Earth material clay slip which is a liquified suspension of clay. I used raw clay because it allowed my artwork to be more fragile and easily destroyed similar to our environment. I dipped the receipts in the clay slip and arranged them in organic forms on my frame. The forms inspired by nature were created through different paper techniques such as rolling, folding, crumbling, and tearing. My work will also be recyclable because it is unfired. The final piece was sprayed with water to express the theme of destruction. In return to our environment I successfully recycled receipts while trying to raise awareness about the harmful effects of thermal paper. My sculpture allowed me to explore the themes of waste, recycling, and destruction through a raw clay sculpture. Thermal paper receipts are not only unnecessary paper waste but dangerous to our health.

**Alyssa Perez**

**Art and Design**

***Toxic and Carcinogenic***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

As an artist that recognizes the problem of receipts, I created a raw clay sculpture that appreciates Earth for its natural resources while raising awareness about daily contact with toxic and carcinogenic receipts. Researching the negative effects of thermal paper in our environment, I discovered that thermal paper receipts are typically not recyclable due to BPA. Receipts pose a threat to our health through industrial chemicals. Paper receipts are also consuming roughly 80,000 to 160,000 trees in just one day. In addition to deforestation; the paper

making process contributes to air and water pollution. For my sculpture I used clay slip which is a liquified suspension of clay from the Earth. I used raw clay because it allowed my artwork to be more fragile and easily destroyed similar to our environment. I dipped the receipts in the clay slip and arranged them in organic forms on my frame. The forms inspired by nature were created through different paper techniques such as rolling, folding, crumbling, and tearing. The final piece was sprayed with water to express the theme of destruction. My work will also be recyclable because it is unfired. In return to our environment I successfully recycled receipts while trying to raise awareness about the harmful effects of thermal paper. My sculpture allowed me to explore the themes of waste, recycling, and destruction through a raw clay sculpture. Thermal paper receipts are not only unnecessary paper waste but dangerous to our health.

**Isabel Presley**

**Art and Design**

***Emotion Rarely Portrayed: A look into Emily Mary Osborn's For the Last Time***

Faculty Mentor(s): Justin Sturgeon, Art and Design

Lead Author Department: Art and Design

Session: High Impact Practice (HIP) Showcase

Emily Mary Osborn had a knack for painting something not often seen in her time period, the art of capturing women in positions of negative emotions, and difficult situations. It feels as though she is pulling away a curtain of some sort, similar to how Gustave Courbet painted farmhands and coal miners in their natural state of working, instead of an idealized and fantasy-like interpretation the rest of his time period seemed to be doing to romanticize back-breaking, excruciating work with barely any payment. Emily paints the human condition, and brings one's attention to it. One could think that she is depicting other females in her time period, and a sliver of herself as well. "For the Last Time" is a painting she seemed to make in regards to two closely bonded female figures- perhaps related, coming to or leaving from the deathbed of someone dear to them. This paper will cover the importance of realism based not only on appearance, but the human mind and reaction. Although Emily paints clear portrayals of people and situations, there could be different meanings hidden between the brush strokes.

**Rebecca Riggs**

**Art and Design**

***Space, Memory, and Temporality in Neolithic Tomb Monuments***

Faculty Mentor(s): Justin Sturgeon, Art and Design

Lead Author Department: Art and Design

Session: Main Oral Presentation Session

The Neolithic megalithic monument of Newgrange is a mystery and a marvel. Created over 5,000 years ago, Newgrange, is only one of the forty passage tombs that makes up Brú na Bóinne complex on the east coast of Ireland along the River Boyne. In the case of Newgrange, the main passage to the central vault is aligned to the winter solstice sunrise in such a way that the sun shines through the passage, illuminating the burial chamber and casting an otherworldly morning light to the interior chamber inside. Every year a lottery is held in Ireland to determine who gets to experience this solstice event. I was one of the sixty people chosen out of over 30,000 applicants. I used this experience as an opportunity to fuel my own creative work and research. I will showcase my personal experience from witnessing the winter solstice at Newgrange,

and display how that has shaped my artistic practice. Although we know that Newgrange had spiritual significance, we have no evidence of what that could have been, as there is no way to verify the culture of the Neolithic people. However, the exploration of theories has allowed me to explore the story of Newgrange. Not only it's creation, but also it's rediscovery and contemporary cultural significance to the people of Ireland. The fact that we will never know the truth displays a significance beyond scientific observation, and suggests something about human nature itself and its search for answers.

### **Lindsay Scruggs**

#### ***Beauty in Decay***

Faculty Mentor(s): Carrie Fonder, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

Background: We assume that there is an increase in healthcare services, and thus costs, among individuals who are abusing substances. However, there is some variation among individuals afflicted by substance abuse in terms of which populations have the highest utilization of healthcare services, which payer source is applied, and the individuals' drug of choice. Our research expounds on these identifiers and how each category impacts healthcare costs. Method: Our data was gathered from the American Health Care Association (AHCA) inpatient 2016-2018 adult records only and hospital financial information ownership status. Geographical indicators were included with zip code data from 2016-2017 (2018 AHCA data was merged with 2017 zip code data) from <https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-statistics-zip-code-data-soi> and rural counties were designated using FL DOH adultInownruralzip16, etc. Costs were calculated using cost to charge ratios- total patient care services expense/ total patient care services revenue. We will use a linear regression to model total healthcare costs. Controls: Substance abuse in this study was controlled using F11: Opioid, F12: Cannabis, F13: Sedative, hypnotic, or anxiolytic, F14: Cocaine, F15: Other stimulant, F16: Hallucinogen, F18: Inhalant, some of T40: Poisoning by, adverse effect of and underdosing of narcotics and psychodysletpics, and some of T43.6: Poisoning by, adverse effect of and underdosing of psychostimulants. We will also control for length of hospital stay, patient demographics, comorbidities, hospital factors such as rural location and ownership status, and ICD-10 codes of certain mental health diagnoses, TBD. Results and Discussion: Still in progress.

### **Sonia Soto**

#### ***Coding our Species***

Faculty Mentor(s): Dale Castellucci, Art and Design

Lead Author Department: Art and Design

Session: Visual Art Exhibit

Clustered regularly interspaced palindromic repeat (CRISPR-Cas9) biotechnologies have revolutionized the scientific field by making human gene-editing a reality. Through the application of CRISPR-Cas9 bioengineering it is now possible to cost-effectively identify and cure genetically inherited diseases for which we know the precise mutation(s). Without hesitation, gene-editing holds a great potential to alleviate human suffering however, this assertion may be partial. Could we abuse these groundbreaking biotechnologies for non-medical purposes? If unregulated, it seems appropriate to predict that our imaginations are the limit

### **Art and Design**

### **Art and Design**

to our desires. The objective for this project is to create a body of work that calls attention to the serious possibilities and/or consequences of using CRISPR-Cas9 biotechnologies for non-medical purposes. My goal is to construct three large paintings measuring 6 feet by 4 feet. The paintings will depict three life size models which I intend to alter utilizing research findings and implementing the most popular phenotypic traits.

### **Elisabeth Urbaez**

#### ***Establishing the Self Through Sequential Art: An Exploration of Identities and Their Subsequent Cultural Impact Through the Analysis of Sequential Art***

Faculty Mentor(s): Haley Lauw, Art and Design

Lead Author Department: Art and Design

Session: Main Poster Session

The correlation between design in the picture plane and text on a comic page has been revealed as an increasingly complex machination over the years. Discussions pertaining to representation in the comics community have suggested that the artform offers something unique in presenting concepts of the self. How do artists approach the task of communicating their perspective? In what ways do their experiences present themselves uniquely on the picture plane? And how do choices made in the design process impact readers' cognition? This research explores these concepts in greater detail. Results are obtained through a unique combination of analysis of scholarly articles and the presentation of the artist's comparative experiences through personal works. The goal of this is to present a full spectrum of perspectives in the comics-making process rather than suggest that the artist's works are solutions to hotly-debated design issues. The artist's work navigates themes of identity and personal growth while experimenting with the relationship between aesthetics and the artist's voice.

### **Art and Design**

## **COMMUNICATION**

### **Micaiala Hamner**

#### ***The Roger Brooke Taney Papers***

Faculty Mentor(s): Kelly Carr, Communication

Lead Author Department: Communication

Session: Main Poster Session

The Taney Papers project aims to acquire, transcribe, edit, annotate, and publish documents of Roger Brooke Taney, Secretary of the Treasury and Chief Justice of the Supreme Court under Andrew Jackson, in a comprehensive digital archive. Taney's largest historical legacy remains his pro-slavery Dred Scott v. Sanford (1857) decision; because of this, his earlier political legacy has been largely overlooked in document collections. Prior to his court years, Taney was instrumental in Jackson's Bank War, sharing the President's concern for the dangers of concentrated economic power. Taney helped craft the language for Jackson's veto of the bill to re-charter the Second Bank of the United States. Our current project focuses on Taney's large role in this tumultuous Bank War era. As a digital cooperative project coordinated by the Massachusetts Historical Society, the Taney Papers project is the first digital publication of these historical artifacts. The objectives of the project include editing, transcribing, annotating,

### **Communication**

and coding the papers for digital publication and fostering public engagement with these primary sources. We work collaboratively with three other projects to create consistent practices for collecting, transcribing, and managing digital collections. As a graduate assistant, I review scanned, handwritten 19th century letters and transcribe them into a Word template with embedded XML encoding. We hope that this project will perform a double public service: giving novice and professional scholars access to a vast array of 19th century resources, and charting a pathway for other scholarly editions to move from collection to transcription and publication.

**Logan Mullins**

**Communication**

***Potential Media Effects on Career Motivations in the Healthcare Field***

**Co-Author(s): Kirsten Traynor**

Faculty Mentor(s): Athena Du Pre, Communication

Lead Author Department: Communication

Session: Main Poster Session

In recent years, medical dramas have become more and more common as a television program genre, with the United States producing the majority of these shows. Since 2000, there have been over 40 television programs aired in the U.S. that are classified as medical dramas. The purpose of this research is to understand the potential impact that shows like Grey's Anatomy and The Good Doctor have on people's motivations in pursuing a career in the healthcare field. To do this, we will be surveying nursing students who are currently enrolled in the accelerated Bachelors of Nursing program here at UWF. The survey we will be administering will contain basic demographic information as well as information about how many medical dramas students watch, how often they watch these shows, and to what extent these shows have impacted their interest in working towards a career in the healthcare field. After gathering this data, we hope to find a positive correlation between the amount of exposure students have to medical dramas and the impact they believe it has had on their career choices. In regard to career motivation, media has been shown to have an impact, but in specialized areas such as the healthcare industry, popular medical dramas could potentially impact the number of people in these and related fields.

**McAllister Sticha**

**Communication**

***Social Media Presence on Undergraduate Enrollment***

Faculty Mentor(s): Kurt Wise, Communication

Lead Author Department: Communication

Session: Main Poster Session

Throughout the last 5 years, undergraduate enrollment in the humanities has declined in academic institutions across the United States, including the University of West Florida (UWF). Two graduate students in the Department of Communication at UWF, Christina Cusack and Taylor Suwarow, are creating a strategic communication plan for increasing undergraduate enrollment and engagement in the College of Arts, Social Sciences, and Humanities (CASSH). As an undergraduate research assistant on their project, I am conducting a subproject toward this plan that examines what correlation, if any, exists between social media presence and undergraduate enrollment in the arts and humanities at various UWF peer and aspirant institutions. With younger generations increasingly using various social media platforms, the social media

presences of academic institutions could potentially affect student enrollment and engagement. I have conducted a content analysis examining the frequency, content, engagement, and followers of these peer and aspirant institutions' social media account postings and will compare that data to procured data on student enrollment in the arts and humanities at those various institutions. This correlative data will be incorporated into a larger addendum of data used to create the strategic communication plan for CASSH at UWF.

## ENGLISH

**Ashlea Adams Hernandez**

**English**

***Feminism's Great Amnesia: Reclaiming the Fact of Motherhood***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: English

Session: Dr. Robin Blyn's Session on "Feminist Regenerations Rereading Feminist Theory"

Mothers face societal pressures to conform to their roles as parents and workers as well as major economic issues in becoming mothers, issues like unaffordable childcare, unpaid maternity leave, and low-paying, inflexible jobs. Second-wave and Marxist feminism have worked together to ensure women are able to join the work-force; however, they have done little to alleviate the underlying issues mothers face as wage-earners. I argue that feminism as a whole presupposes that motherhood is a bondage from which all women must escape; it does not grapple with the patriarchal image of the ideal worker; and it presupposes that all mothers desire to work. I will explore the concepts of institutional motherhood and wage-earning as well as how these unaddressed concepts affect the intersectional identities of mothers, the result being that many reject feminism as a whole.

**Matthew Daniels**

**English**

***Roundtable Discussion with Directors on Theatrical Adaptations, with faculty moderator Dr. Katherine Romack***

**Co-Author(s): Tyler Henry, Rachel Hrisca, Chandler Mapoles, Rylee Preston, Bryan Priefer, Harmoni Till**

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Roundtable Discussion with Directors on Theatrical Adaptations, with faculty moderator Dr. Katherine Romack

**Matthew Daniels (Director & Cast)**

**English**

***Julie Caesar by The Ceramics***

**Co-Author(s): Harmoni Till (Director & Cast), Sara Upton (Cast), Catherine Lysek (Cast), Megan Watson (Cast), James Hatfield (Cast), McKenzie Gentleman (Cast), Dawn Johnson (Cast), Teddy Siren (Cast)**

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Director's Cut Special Session on Theatrical Adaptations

This proud little production written and performed by Ceramics theater troupe puts a Mean Girls spin on Shakespeare's Julius Caesar. This high school comedy



counter-cultures the original source material while remaining faithful to Shakespeare's original themes and diction. Because the roles consist primarily of teenage girls, the majority of the male-dominated cast perform female roles, reversing the traditional Shakespearean transvestism of the boy actor. Watch as Julie Caesar, played by a male actor, dominates the stage until her fall at the hands of her closest friends. Watch Fabious and Brutiful plot Julie Caesar's downfall in a fateful attempt to rule the school and put their competition—the nerds—in their place. We hope you enjoy our performance of these Queen Bee characters and their battle over Rome High School and the stage.

**Noah Desimone**

**English**

***Arms, Armor, and Eroticism: Spenser's Patriarchal Order***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Arms, Armor, and Eroticism in Elizabethan England" with faculty moderator Dr. David Earle

The subject of arms and armor has persisted as a largely neglected area of study in the scholarship about Edmund Spenser. This essay explores the intersection between arms and eroticism in *The Faerie Queene*. Delineating the contours of and intersections between the erotic Faerie world and the allegorical framework of *The Faerie Queene*, my essay uses Spenser's presentation of the "warlike" woman as a launching point into my examination of the poem. My essay especially seeks to understand the critical reception of Britomart, the proto-feminist exemplar of "warlike puissance in ages spent" (302). How, I ask, does Spenser figure and weigh in on the relationship between proto-feminist martial transvesticism and men, disarmed by eroticism in *The Faerie Queene*?

**Michalah Dunson**

**English**

***His Two Minds***

Faculty Mentor(s): Nicholas Mohlmann, English

Lead Author Department: English

Session: Dr. Nicholas Mohlmann's Session "Native American Novels"

In "Griever: An American Monkey King in China" by Gerald Vizenor, the novel uses the words "the audience" as a way of signifying a shift of character between Griever as the mixed-blood trickster to the famous Chinese folklore the Monkey King as a way to respect the Chinese culture. The profound display of signaling the Monkey King's entrance correlates with Peking operas, which is a style of opera within the Chinese Culture that consists of acrobatics, dialogue, singing, and miming within the Chinese Culture.

**Kallie Hatfield**

**English**

***"The Harvesting Fields"***

Faculty Mentor(s): Regina Sakalarios-Rogers, English

Lead Author Department: English

Session: Main Oral Presentation Session

"The Harvesting Fields" is a creative work in which the unfamiliar plays an important role. The story sets the protagonist, John, in a landscape he has not experienced before, the rural cornfields of Indiana, where he is confronted with mysterious creatures that stalk in the night. Throughout the piece, John interacts with his friend, Warren, and their families, who perhaps know more about the

creatures than they show. The theme of the unknown is exhibited throughout the story with the utilization of suspense as an acting agent. The creatures in the cornfields, which are a subversion of tooth fairies, are altered to become that which is unfamiliar and strange. John is eventually forced to confront both the creatures in the cornfields and subsequently his own fear of the unknown. "The Harvesting Fields," therefore, becomes a reflection of the challenges one faces when exploring new viewpoints surrounding common assumptions.

**Tyler Henry**

**English**

***The Knight of Continnence: Fragile Masculinity in Edmund Spenser's The Faerie Queene***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Arms, Armor, and Eroticism in Elizabethan England" with faculty moderator Dr. David Earle

In *The Faerie Queene*, Edmund Spenser's epic poem, the possession and retention of virtue is woven into the fabric of knighthood. Sir Guyon is the Knight who embodies Temperance in the epic. In his adventures, he faces many trials. Two of the most significant of these trials are the Bower of Bliss and the Cave of Mammon. When confronted with the temptation offered by the Bower, Guyon destroys it. However, when he is confronted by temptation within the Cave of Mammon, he resists. Some critics read the destruction of the Bower as Guyon being in the right, the Bower is idolatrous, evil and worthy of destruction. Others find Guyon's reaction extreme, he is, after all, destroying a locus amoenus, a place of supreme pleasure, beauty, and joy. It is Guyon's masculinity, representative of hegemonic masculinity in the Renaissance, that allows him to resist the temptation of the Cave of Mammon, yet hegemonic masculinity also causes the destruction of the Bower of Bliss.

**Tyler Henry (Director & Cast)**

**English**

***The Prince of New York (Pericles) by That '90s Show***

**Co-Author(s): Rylee Preston (Director & Cast), Bryan Priefer (Director & Cast), Madelyn Almond (Cast), Cody Mitchell (Cast), Chelsea Courneya (Cast), Morgan Matrone (Cast), Shirley Flowers (Cast), Noah Desimone (Cast), Tana Rogers (Cast)**

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Director's Cut Special Session on Theatrical Adaptations

Gangsters, partying, and romance. What more could you ask for from this 1920's rendition of Shakespeare's *Pericles, Prince of Tyre*? With the influx of rave reviews and audiences demanding more, That '90's Show is back with a behind-the-scenes take on the making of *The Prince of New York*. In focusing on the actors' audition tapes, audiences will get a taste of all the ingredients that go into cooking up a killer performance. The audition tapes feature one-on-one interviews of the main cast and present insight into why they auditioned for their roles, how they adapted their characters, and how they envisioned the production of the play. The audition tapes will also feature raw, never-before-seen footage of the actors's read throughs and rough scene acting leading up to the production. Directors will provide a tour of *The Prince of New York*'s travels through the boroughs and introduce a magical realist New York.



**Crystal Holt**

English

***Comparing Two Indigenous Novel***

Faculty Mentor(s): Nicholas Mohlmann, English

Lead Author Department: English

Session: Dr. Nicholas Mohlmann's Session "Native American Novels"

**Rachel Hrisca (Director & Cast)**

English

***Richard III: A Carn-*EVIL* Experience by The GlobeTrotters*****Co-Author(s): Chandler Mapoles (Director & Cast), Georgana Christley (Cast), Emily Fisher (Cast), Theresa Gunger (Cast), Ashleigh Gardner (Cast), Chaise Waller (Cast), Stephen Watson (Cast)**

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Director's Cut Special Session on Theatrical Adaptations

Come one, come all...to the greatest show on earth! Aerialists, lion-tamers, tight-rope walkers, clowns, a seer, and a freak that will do anything to become the Ringleader. Richard, the freak-show performer, is ready for his time in the spotlight. Prophecies and murder under the big top—what more could viewers want? Get a behind the scenes look at how this adaptation of Richard III turned into quite the circus. Viewers will follow the journey of script writing, casting assignments, stage settings, costume design, and production to set the stage for this one of a kind adaptation. So, step-right up! You won't believe your eyes...

**Madeleine Hutchison**

English

***To Steal and to Fly: Anti-Essentialism and Freeplay in "The Laugh of the Medusa"***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: English

Session: Dr. Robin Blyn's Session on "Feminist Regenerations Rereading Feminist Theory"

Hélène Cixous's "The Laugh of the Medusa" makes an explicitly anti-essentialist argument to explain women's behavior, embraces the freeplay of the signifier and *différance* to debunk essentialism, using a variety of often contradictory signifiers to represent women and to illustrate that their nature is unfixed, changeable and, therefore, not the product of immutable biology. Critics of essentialism argue that bestowing an essence upon women serves to reinforce patriarchal assumptions about them that flattens the diversity of their lives, robs them of self-determination, and promotes an ideal of womanhood that shames those outside its definition as inferior women. Because of this, many feminists have sought to critique essentialism when they see it arising in feminist discourse, "The Laugh of the Medusa." In the essay, women are urged to write because their "[bodies] must be heard." To Cixous, language in the phallogocentric order is operated by a "libidinal and cultural—hence political, typically masculine—economy" that is the site of women's oppression. In order to end her place of silence in this order, women must devise a new writing that departs from "speech which has been governed by the phallus." The formulation of this *écriture féminine* is where Cixous appears to formulate several essentialist claims about women's nature and what kind of writing would express it. These critics fail to account for the equal measure of the essay that contains messages freeing women from traditional patriarchal assumptions, some biological, and poststructuralism's influence on Cixous work.

**Dawn Johnson**

English

***The "Myrrhour's" Image: The Duality of Text and Image in Edmund Spenser's The Shepheardes Calender***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Language, Genre, and Duplicity in Spenser and Milton" with faculty moderator Dr. Kevin Scott

Although much has been said about the woodcut depiction of Collin's pipe contained in the January and December eclogues of Edmund Spenser's *The Shepheardes Calendar*, the full significance of the twelve woodcuts prefacing each eclogue remains to be elucidated. The discrepancies between the eclogues and the images that accompany them allow Spenser to simultaneously appeal to patrons and also work from a place of political resistance. Many critics argue about the political agenda *The Shepheardes Calendar* promotes. Is Spenser influenced by Machiavelli or by Bodin? Is the text absolutist or republican? One way to go about answering these questions is to examine the disjunction between the woodcuts and the text that accompanies them (as well as at the history of the inclusion and exclusion of the images from the text across editions). Beyond the images contained in the poetic calendar, I also examine the complex paratextual framing of *The Shepheardes Calendar* as well as Spenser's indebtedness to Virgil, whose *Buccolics* were written in honor of Augustus at the crux of Rome's transition from republic to empire, providing an important backdrop to Spenser's poetic intervention into politics.

**Chandler Mapoles**

English

***"A touch, a touch" Tempo and the Art of Defense in Hamlet's Duel***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Arms, Armor, and Eroticism in Elizabethan England" with faculty moderator Dr. David Earle

Critics and historians have contextualized Shakespeare's scenes of swordplay by examining Elizabethan and other European fencing manuscripts as they intersect with several key scenes of the play. However, scholars, to date, have failed to recognize the way that the idea of proper "tempo," theorized so systematically in early modern fencing manuals, governs the theatrical timing of actions, not only in *Hamlet*, but in the entire genre of Elizabethan and Jacobean revenge drama. *Hamlet* presents fencing and revenge as structurally synonymous—as performative as they are tactical—for *Hamlet*'s skill at the art of defense which affords him control over the climax of the play and over his opponent is tied to his own nationalism and nobility bolsters the symbolic opposition between *Hamlet* and his Francophile foil, Laertes. Building on extant fencing criticism, I argue that the intimate connection between the proper technique and tempo of fencing and the tactical motives of *Hamlet* and Laertes that cross in the duel characterize and emphasize the drama of the play. *Hamlet*'s demonstration of proper and improper tempo in the final act of *Hamlet*, I assert, exemplifies the moral parallels between the practice of fencing and enacting revenge in the play.

**Dakota Parks**

English

***Steller Presentations: Photo Journalism Abroad***

Lead Author Department: English

12 Session: High Impact Practice (HIP) Showcase

**Dakota Parks*****That's Not Feminism Babe: Bisexuality from Vogue to Rogue***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: English

Session: Dr. Robin Blyn's Session on "Feminist Manifestoes for the Twenty-First Century"

English

**Rylee Preston*****Tricking the Lens Off: The Trickster in Indian Killer***

Faculty Mentor(s): Nicholas Mohlmann, English

Lead Author Department: English

Session: Dr. Nicholas Mohlmann's Session "Native American Novels"

The colonial lens used to view Native American cultures allows for inaccurate depictions of these cultures. For my essay, I will analyze the use of Native American trickster characters, specifically the killer in Sherman Alexie's, *Indian Killer*, to question established societal viewpoints of Native American cultures. The viewing of the killer as a trickster character provokes new understanding of the novel as well as depictions of Native American cultures.

English

**Bryan Priefer*****The Ashes of Desire versus The Power of Choice in Paradise Lost***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Language, Genre, and Duplicity in Spenser and Milton" with faculty moderator Dr. Kevin Scott

Above all, choice is what matters most for Milton and his portrayal of the fall of man in *Paradise Lost*. Emblematizing Milton's exploration of choice is the allegorical inclusion of The Tree of Knowledge. Despite its moniker, the tree does not provide knowledge to those that eat from it, as the demons in hell come to recognize, the fruit does not provide nourishment but ash. Instead, the tree is an idol designed to tempt and sway these characters so that they choose to disobey God. For Milton, this disobedience is depicted as necessary for humanity's redemption and path to heaven—Adam and Eve's fall is, in the end, a fortunate one. The fact that Milton's god is omniscient highlights his advocacy of human choice, as he could have stopped Satan from tempting Eve at any time. God's insistence on choice captures a central aspect of Milton's philosophy of good and evil.

English

**Teresa Scott*****Legislating Female Humanity: How Feminist Jurisprudential Scholarship Problematicizes Susan B. Anthony's Speech After Arrest for Illegal Voting***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: English

Session: Dr. Robin Blyn's Session on "Feminist Regenerations Rereading Feminist Theory"

English

**Shaundra Smith Cadogan*****Prelapsarian "Equality" and Eve's Idolatry***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Feminine Equality in Early Modern

English

Culture" with faculty moderator Dr. Allen Josephs  
John Milton, in *Paradise Lost*, justifies God's double punishment for Eve according to the "principle of charity" which means Milton believed that God could not have intended ill will in orchestrating Eve's subjection to Adam any more than He would have orchestrated the inevitable fall of humankind. Milton suggests that patriarchy begins with Eve's sin. Milton believed that all are to be subject to God, perhaps shaping his prelapsarian gendered sphere in *Paradise Lost* with the Pauline doctrine in mind that all ought to be "subject one to another" (Eph. 5.21). Thus, although Eve is subject to Adam, she is not inferior to Adam in the prelapsarian state. Considering the premium that Milton placed on obedience, and that he revered the spiritual capacity afforded to women more highly than the elevated social position of men, in *Paradise Lost*, Milton finds idolatry within the notion of equality when women seek to function like men in order to be equal to them.

**Harmoni Till*****Julie Caesar***

Co-Author(s): Matt Daniels

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Dr. Katherine Romack's Session "PERFORMANCE Julia Caesar"

This proud little production written and performed by the Ceramics theater troupe puts a Mean Girls spin on Shakespeare's *Julius Caesar*. This high school comedy counter cultures the original source material while remaining faithful to Shakespeare's original themes and diction. Because the roles are comprised mostly of teenage girls, the majority of the male-dominated cast will perform female roles, reversing the traditional Shakespearean transvestism of the boy actor. Witnessing the downfall of Julie Caesar changes what it means to exercise power, make friends, and influence people. Watch as Julie Caesar, played by a male actor, dominates the stage until her fall at the hands of her closest friends. See Fabious and Brutiful plot Julie Caesar's downfall in a fateful attempt to rule the school and put their competition--the nerds--in their place. Watch Antonia, the SGA president and best friend of Julie, rise to redemption over the conspirators. We hope you enjoy our performance of these Queen Bee characters and their battle over Rome High School and the stage.

English

**Sara Upton*****Authentic Friendship in The Faerie Queene***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Feminine Equality in Early Modern Culture" with faculty moderator Dr. Allen Josephs

Edmund Spenser's *The Faerie Queene* is grounded in the idea that true friendship is based on virtue and reciprocity. Both parties to the friendship must sacrifice for each other and have concern for the other person's wellbeing in equal measure to their love of virtue. Spenser's conception of friendship was influenced by Aristotle and Cicero, whose philosophies focus exclusively on friendships between men. What is fascinating is that Spenser chose, as his exemplar of true friendship, a relationship between two women. The hegemonic Renaissance idea that women were incapable of aspiring to classical ideals of friendship, conjoined

English

with culturally embedded suspicions about associations between women in the early modern period, make Spenser's foregrounding of Britomart and Amoret's friendship in *The Faerie Queene* highly significant. If friendship between two men had, for at least 1,000 years, been depicted as a higher form of friendship, Spenser suggests that friendship between two women, exterior as it was to the culture of male friendship in Elizabethan England, transcended the limitations of not only the early modern, but the classical, idea of masculine friendship.

**Megan Watson**

**English**

***The Strength of Unified Peace: An Analysis of Unity and Collective Strength in Shell Shaker***

Faculty Mentor(s): Nicholas Mohlmann, English

Lead Author Department: English

Session: Dr. Nicholas Mohlmann's Session "Native American Novels"

My paper discusses how LeAnne Howe's *Shell Shaker* illustrates the importance of unity and the collective strength that it provides to the Choctaw people in the novel. I argue that the importance of unity and collective strength is illustrated through the use of split time and split identities. It is through the reunification of the split timelines and split identities that create the strength needed to bring peace to the Choctaw Nation of the novel.

**Stephen Watson**

**English**

***Error and Wandering Virtue in The Faerie Queene***

Faculty Mentor(s): Katherine Romack, English

Lead Author Department: English

Session: Research Panel Discussion on "Language, Genre, and Duplicity in Spenser and Milton" with faculty moderator Dr. Kevin Scott

Christian virtue and court politics coincide in Edmund Spenser's allegorical examination of the self-fashioning of a gentleman. Self-fashioning is modeled by an array of characters who are tested through their wandering. Wandering and errancy (the etymologically of which signifies both positive and negative error) are a vessel for the exploration of ontological and theological truth. Not only is the journey of Redcrosse Knight, the central figure of the first book, an allegorical figure for the virtue of holiness, but the knight is also entrusted with the quest of championing the cause of Una, the allegorical representation of Truth. Redcrosse is both the Christian Soldier and the sort of gentleman who becomes fashioned by the process of errantry.

**Gina Castro**

**English**

***Manifesto***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: English/Communication

Session: Dr. Robin Blyn's Session on "Feminist Manifestoes for the Twenty-First Century"

When I was a little girl, I read the *Twilight* series more than a dozen times. I could not get enough of the romance between Bella and Edward or her tough choice between Jacob and Edward. I loved every page and wished with all my might that I too would find an undying love like that. I read quite a bit of romance throughout my teenage years, too. I read the *Hunger Games* series and rooted for Katniss and Peeta's love story. I picked up the *Divergent* series shortly after

and again hoped for Tris and Tobias to fall in love. All of these books, though not entirely romance novels, made the love story a prominent aspect of the storyline, but the books also featured strong women. Bella slit her own arm open to distract a vampire from killing her loved one. Katniss volunteered her own life in place of her sister's. Tris swapped her modest, controlling life in the Abnegation faction for a life of thrill and freedom in the Dauntless faction. These books taught me that as a woman, I can be strong and fearless and that I can find a partner who will love all of those characteristics. But one thing those books did not tell me was the importance of being woman centered. Bella left her mother to live with her father in the woods of Washington. Once Bella's relationship with Edward blossomed, she stopped seeing her girlfriends from high school all together. Her friends do

## GOVERNMENT

**Conner Holt**

**Government**

***Caesar and Cicero: Leaders of the End of the Roman Republic***

Co-Author(s): Sheri Boudreaux, Christian Holt

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Government

Session: Main Poster Session

Two renowned politicians shaped the fate of the late Roman Republic: Gaius Julius Caesar and Marcus Tullius Cicero. Aligning themselves with opposing political factions, the Populares and Optimates, respectively, each of these statesmen played key roles in the political sphere of Rome. Rising to the office of Consul in 59 BC, Caesar increased his influence in the Senate by forming an alliance with Pompey and Crassus known as the First Triumvirate, making them the three most powerful men in Rome. Another of Caesar's sources of political power emerged from his campaigns in Gaul and his propagandized chronicles of them, *Gallic Wars*. Cicero on the other hand, dedicated his life to studying the behavior of man. As a prominent lawyer, author, and orator, Cicero's accounts on a wide array of subjects – including human relationships, Roman religious beliefs, and analysis of the Republican system— gave him huge political influence. His verdict on the fate of the Catiline conspirators led many of his fellow Senators as well as the Triumvirate to condemn him, believing Cicero sought to discredit Caesar's deeds and to increase his own authority. Caesar and Cicero, in both their own works and in their interactions with one another, inadvertently contributed to the demise of the already-fragile Republic.

**Benjamin Kinnard**

**Government**

***Pivotal Votes: Ideological Caucus Membership and Committee Assignments in the U.S. House of Representatives***

Faculty Mentor(s): Adam Cayton, Government

Lead Author Department: Government

Session: Main Poster Session

The most important step in passing legislation in Congress lies in the committees where legislation is marked up and sent to the floor of the chamber for a vote. Understanding the composition of these committees is an important step in understanding why legislation is passed and why legislation is shaped the way

it is. Ideological caucuses have been described as formal organizations that seek to use their votes to achieve policy outcomes counter to the desires of party leadership. The relationship between the two is what this project covers. This project analyzes why ideological caucuses get the seats in committees in the House of Representatives that they do. Using the assumptions that caucuses wish to achieve goals counter to those of party leadership with data from the House from 2005-2010, three hypotheses were tested using logit models to see if significant relationships exist between caucus membership and committee assignments that fit the prior assumptions of ideological caucuses. The results show that ideological caucus members do not tend to be assigned to desirable committees more often than non-caucus members in most cases. However, the Democratic party does assign moderate members to constituency committees significantly more often than extreme members, whereas the reverse is true for the Republican party, pointing to a difference in the two parties not accounted for in the models. This research shows that while ideological caucuses may be a factor in committee assignments, there is not enough evidence to prove that caucus membership significantly predict committee assignments.

## HISTORY

**Emaly Allison**

**History**

### ***The Girl I Left Behind Me: An Exploration into the Women's Army Corps Members of Escambia County and their Effect on WWII***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

Women in warfare is a hot-button topic that has existed since the early Romans and Greeks and is still heavily discussed today. The history of women during World War II is an especially important topic area with new resources and groupings of research appearing every year. However, the history of women during WWII in West Florida, specifically Escambia County, is a very small and nearly untouched minefield of information. Escambia County was and is home to several military sites and is the hotspot for Florida military history. During WWII, over one hundred women left their homes and families in Escambia County to join the Women's Army Corps and serve their country in any capacity. These women came from all walks of life and journeyed near and far to enlist in the WACs. Through analysis of original muster rolls, post-war listings of service, and newspaper articles, connections between marital status, education, age, race, and pre-war skill sets can be made. Connections between enlistment dates, age, and race can also be found within the data showing the bonds of friendship and community following these women to war. This paper follows the trail of the women of Escambia County forging new identities and communities through their enlistment in the WACs and the bonds woven through the force of change. Their stories weave a new narrative in the study of women's roles during World War II. The change they instigated would grow to be the backbone of future women in both military and civilian life.

**Jose Alvarez**

**History**

### ***The 1908 Pensacola Streetcar Strike***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

In 1908, amidst the development of the city of Pensacola, a confrontation broke out between the Pensacola Electric Company and the city's streetcar operators over a new ordinance regarding roll calls for suspended workers. This led to a strike that rapidly grew from a non-violent boycott into violent action between strikers, strikebreakers, and local law enforcement, ending in a legal battle between the two factions. In the vein of labor historians such as Raymond Williams, Howard Zinn, and David Montgomery, I have used the firsthand accounts of local Pensacola newspapers and court documents relaying the strike's aftermath. My research finds that the cause for confrontation was due to the Pensacola Electric Company's refusal to negotiate with the union. The company refused to hear out the union's demands, accused them of having personal incentive for launching the strike, and called in strikebreakers to undermine the boycott. The union, meanwhile, attempted to keep the peace and only resorted to violence when pushed. Additionally, despite newspaper reports to the contrary, the strike held support from large sections of the general public. This included even law enforcement leaving their positions to stand with the strikers. Ultimately, the Pensacola Electric Company's lack of willingness to compromise, the presence of strikebreakers to undermine the boycott, and the general public discontent against the company caused the strike to become violent. A growing sense of desperation and the stubbornness of the company led to growing tensions and, ultimately, the failure of the strike itself.

**Lindsey Beck**

**History**

### ***From Racism to Representation: Henry McMillan's Divergent Election Reform in Escambia County, Florida 1970-1986***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

In 1973, local elementary school teacher, Henry McMillan, formed the Escambia County Coalition to mobilize a grassroots movement for election reform. The coalition refused to call themselves a civil rights group but remained dedicated to advancing the black community through existing laws rather than demonstrations. McMillan would publicly denounce boycotts and demonstrations as activism styles of the sixties. Though successful in his goal, he was ultimately denounced by the NAACP and local SCLC leaders. Escambia County's demographic makeup has remained, throughout its history, a primarily white county. At-large elections, coupled with bloc voting, consequently dilute the voting power of the black community. In 1945, The Florida Legislature altered election style for all state county offices to at-large elections in response to the conclusion of the poll tax and racially exclusive primaries to prevent mobilization of black voting power. For over twenty years a black candidate would not attempt to run for office. Through *McMillan v. Escambia County*, single-member elections were established. Judge Arnow created a black majority District 3 and McMillan successfully campaigned



for the county commissioner seat. This research pushes against the criticism to demonstrate that McMillan's divergent style was best suited for Escambia County black activism at the time. A time in Pensacola history immersed in racial tension, school boycotts, and revived Ku Klux Klan activity. This is accomplished through archival collections inside of the UWF Library, local Pensacola and Mobile newspapers, oral histories, scholarly research, and historiographical study on election reform across the United States.

**Bruno Cordeiro**

**History**

***Light that Comes from Darkness: How a Dutch-Iberian Conflict Brought Peace and Toleration to the New World***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

As dawn approaches on the early hours of April 30th, 1625, a group of sailors stand watch in the breezy dunes of Salvador. On the horizon, one of them spots a mast. He turns away for a moment to alert his fellow soldiers and watches as a massive fleet blocks the rising sun. He did not know at the time, but that armada would carry close to four times the men that his employer, the Dutch West India Company, had brought to the New World. The Portuguese-Spanish Union brought twelve thousand men ashore to regain control over their prized possessions in South America. These sailors would never see their homes again. Their deaths, however, would drive the Dutch to the brink of conquering the most sugar producing province in the world: Pernambuco. Their influence would not stop at economics, however. The push to settle the province brought about a sort of Renaissance to Northeastern Brazil. People became free to worship any religion. Roads, bridges, and ports were built. For centuries to come, the Portuguese and Brazilians would still rely on Dutch infrastructure. Arts were brought to the New World and Europeans themselves discovered more about the natural world. While not immediately apparent, the Dutch invasion of the borderlands separating the Portuguese, Spanish, French, and English empires became the first step to Brazilian Independence. The values left behind by the Dutch in the Northeast led to what today stands as the country's unique sense of 'warm nationalism' and 'homogeneous identity'.

**Keegan Cullen**

**History**

***Christian Persecution under Emperor Septimius Severus***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

Under the reign of Septimius Severus, the city of Carthage was a place of severe Christian persecution. This persecution was regardless of nobility or gender. In this analysis, we will look at Satorius and Vibia Perpetua, who were both martyred on the same day in celebration of Emperor Severus sons' birthday. Primarily, the reason for the persecution of the Christians under this particular emperor was because Christians would not give supreme loyalty to the emperor. This would outrage any prestigious Romans because it broke *mos maiorum*, the tradition that all Romans were only loyal to Rome itself and their own families. Romans viewed Christians as disobedient and rebellious to Rome itself if they did not declare that Caesar was a divine being. If Christians would refuse to

confess that Caesar is God, they would often be thrown into prison and put to death. Furthermore, Romans were shocked by how Christians wanted to preserve human life at all costs, allow women to have more roles, and worship their God together in one room. Overall, Christians were misunderstood in Roman culture because of their allegiance to one God, and social customs that were forbidden. Satorius and Perpetua lives will represent how Roman culture had misunderstood Christians in the beginning of the third century.

**Mathew Denny**

**History**

***The Land Between Nations: The Franco-German Frontier***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

From Rome to the end of the age of modern empires, the land of Alsace-Lorraine has been and continues to be an important borderland between empires, peoples, and cultures. For Rome, the land served as a barrier to the barbaric Germanic peoples, protecting the civilized Roman lands in eastern Gaul. The Carolingian successor kingdoms ultimately ended up split across either side to the region with some kingdoms such as the short-lived Lothringian Kingdom ruled between the western Franks and their eastern Germanic cousins. In time, the region ended up passed between the Franks and the Germanic Holy Roman Empire until Napoleon shattered the latter, cementing French dominance in the region. Alsace-Lorraine served as a catalyst for war nearly a century later and later continued to serve as a battleground for cultural identity. As a borderland, Alsace-Lorraine delineated both the borders and the relationships between the people who reside along and within the region. The focus of this paper is to examine the role that the region played in Franco-German relations in the lead up to German Unification and the World Wars.

**Daniel Engelgau**

**History**

***The Roman Games During the Height of the Empire***

**Co-Author(s): Faith Denton**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

During the height of the Empire, Roman amphitheaters provided entertainment to the public through games. The two largest venues where these games took place were the Flavian Amphitheater and the Circus Maximus. The games provided a source of entertainment through chariot races, gladiator contests, naval battles, animal hunts, public executions, and theatrical performances. The Flavian Amphitheater held gladiator battles, animal hunts, and on occasion naval battles, while the entertainment in the Circus Maximus focused on chariot racing. The Roman Emperors and leadership took great interest in the games to the point that they sometimes had a major influence over the outcomes. The citizens of Rome who attended the games also influenced the match. Leaders and citizens alike determined if the match was satisfactory based on how the gladiators fought or if the fight was favorable to their desired results. Gladiators could be spared or slaughtered based on the desire and satisfaction of the leader or the crowd. The size of the Flavian Amphitheater and the Circus Maximus allowed for a large outreach to the community to be more connected. Leadership



celebrated and provided the games to maintain peace and prevent the populous from revolt.

### **James Feehan**

**History**

#### ***Death, Injury & No Pay: The Pensacola Shipbuilders Who Navigated the Legal System***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

The study of labor history regularly looks at how worker agency intertwined with the judicial system to create labor movements. The field has much scholarship which looks at the trade unions that formed in large industrial cities. While this attention is warranted and important in understanding the history of workers, there has been less of a focus on the importance of labor struggles in smaller cities across the U.S. One area which requires more attention is the experience of shipbuilders in Pensacola during the progressive era. During World War I the demand for ships increased dramatically. This led to a boom in the local shipbuilding industry with numerous shipbuilding companies forming towards the end of World War I in the Gulf South area. With the increased demand for ships came a necessity to produce in a time frame. This matched with an unqualified labor force meant an extremely dangerous work environment. Workers were regularly injured, were not paid their wages, and in some cases, such as Thomas Malone's, killed while at work. Through looking at records from law firms and the Pensacola Shipbuilding Company, I will attempt to show how shipbuilders in Pensacola navigated the legal system in a struggle for workmen's compensation. At this time, Florida, unlike many other states, had no workmen's compensation laws which made their struggle even more difficult. The personal letters from employees and correspondence between attorneys offer insight into the many challenges that stood in the way of workers being fairly compensated.

### **Jessica Freeman**

**History**

#### ***W.A. Blount and the Limits of Southern Progressivism in Pensacola, Florida***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

By the early twentieth century, a new political movement had started to make its way into the minds of voters and local government. The movement was called Southern Progressivism because its ideals focused on Southern progress and ensuring the South would never again be behind in schooling and infrastructure. This poster's overall focus is Southern Progressivism in regards to Pensacola, Florida and the 1910-1911 U.S Senate election. The race was between Pensacola native William Alexander Blount and Jacksonville senator Nathan P. Bryan. Blount ran his platform on Southern Progressive ideals, which appealed him to many Pensacola voters. However, Blount still lost the race by a narrow margin. Why and how did he lose the race when he represented everything Pensacola natives loved about Southern Progressivism? Blount's correspondence and the newspapers of the time shed a light on this question. Not only was Blount's persona very different when he wrote to family, but outside newspapers saw a

hypocrisy in him that the Pensacola Journal did not care to report on. The overall cause of Blount's loss, though, was the weaknesses and limits of Southern Progressivism. There is very little literature on Pensacola and its relationship to this movement, even though the city has a rich history with it. This poster's aim will be to teach a side of Pensacola history that is relatively unknown and rarely talked about. Blount was a beloved political figure and Southern Progressive, but even this was not enough to garner him the Senate votes he needed.

### **Megan Garland**

**History**

#### ***The 1968 Florida Teacher Strike in Escambia County***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

### **Morgan Guyette-Lancto**

**History**

#### ***Observations of Olmstead's Central Park and How It Has Been Preserved***

**Co-Author(s): Raven E. Hunter**

Faculty Mentor(s): Jasara Norton, English

Lead Author Department: History

Session: Main Poster Session

Our project surrounds the observation and experience of our recent trip to Central Park in New York City where we analyzed our observations of if the park's current function aligns with Frederick Law Olmstead's vision and desires for it. In the Fall semester of 2019, we took Nature of Writing with Dr. Jasara Norton where we analyzed the intention and thoughts of a wide variety of nature texts by American authors. In our discussions of American nature, it was proposed as a class that we venture to Central Park in New York, a man-made landscape designed to be aesthetically pleasing, and further our analysis of nature writing in the context of a plot of land rather than a formal publication. However, we were under the belief that the allure of technology, such as motor vehicles and smartphones, and greedy capitalist interests of tourism would take away from the original purpose of the park- enjoying nature as a break away from the bustle of busy city life. Upon arrival, we were pleasantly surprised to find that people of the park seemed to be there intentionally; many people were there reading, taking leisurely strolls, interacting with one another, and appreciating the natural aspects of the park. Our research deduces that Central Park does preserve Olmstead's original intentions, even if it does so in a way that has changed based on the time period in which it functions.

### **Thomas Hackworth**

**History**

#### ***"Dining in Ancient Rome"***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

In ancient Rome, having wealth meant a better standard of living for your family which meant a better selection of food was available to you. The food that you ate, the people that you ate with, where you ate, and how you ate, depended on your wealth and social status. The wealthy could afford to buy the best of the crops and a variety of meats for their meals while the poor were restricted to

lentil soups, beans, and bread for their daily sustenance. The wealthy had house slaves to prepare, cook, and serve the meals while the poor of the city usually got their food from street vendors or maybe a thermopolium or wine shop.

**Sydnee Hammond**

***Cacao: The Driving Force of Mesoamerica***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

In sixteenth-century Mesoamerica, chocolate was a highly valued product amongst different tribes in South America. This poster will focus on how cacao bound Mesoamericans together socially, culturally, and economically. It was ingested, used in rituals, defined social status, and used as currency. Cacao transcended Westernization and made its way back to Spain to be enjoyed similarly to Mesoamerican preparations. The significance of cacao shows the intricacy of Native life. Cacao drove all aspects of Mesoamerican culture; it transcended time and has lasted as a part of ancient heritage that has otherwise faded away.

**History**

**Sydnee Hammond**

***Borderlands New Orleans: How Loose Laws Made Loose People***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

New Orleans, Louisiana has always been a unique American city. New Orleans has roots stretching across many countries and civilizations, making it not only one of America's borderlands, but rich in tradition and culture. This poster will focus on what makes New Orleans a borderland, how lax government affected the city and its culture, and the development of the city's unique creole culture. Situated on the Mississippi River, New Orleans was a vital port city for trading through the Gulf of Mexico. Frenchman Jean-Baptiste Le Moyne de Bienville founded New Orleans as La Nouvelle-Orléans in May of 1718. Spain quickly gained possession of the city in 1763, only for it to be turned back to the French in 1800. By 1803, New Orleans became custody of the United States through the Louisiana Purchase. Volleyed between the French and Spanish, and on the outskirts of these two vast empires, New Orleans is the definition of a borderland. Because of lax government, New Orleans welcomed, and kept, many different types of people. Specifically, these included Creoles, and Cajuns, amongst other groups like pirates, Africans, and a mix of everything in between. This poster will show how the diversity of these people created the unique culture of New Orleans, and is to this day, one of America's most interesting cities.

**History**

**McKenna Hoffman**

***Political Rivalries in the Late Roman Republic***

**Co-Author(s): Russel Parsley**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

Gaius Marius became a prominent political and military figure during the late Roman Republic his bitter rivalry against Lucius Sulla would push Rome to civil

**History**

war. Marius first showcased his prominence during the Jugurthine War. Sulla acted as Marius' quaestor and was responsible for capturing Jugurtha, and his hatred for Marius began when Marius took credit for capturing Jugurtha. Marius was elected consul after vanquishing the invading armies of the Cimbri and Teutones tribes. As consul, he began making radical reforms to elements of the Roman army known as "The Marian Reforms." Leading the Populares, he rivaled Sulla and the Optimates. These varying political rivalries between Gaius Marius and Lucius Sulla soon sparked civil war. The outcome of the civil war marked the beginning of the end for the Roman Republic. Marcus Antonius was a critical figure in the transformation of the Roman Republic into the Roman Empire. His rise to power stemmed from his allegiance to Julius Caesar. He served as a general and eventually became part of the Second Triumvirate next to Octavian (later known as Augustus), and Marcus Aemilius Lepidus. With the greed for power rising, relations were strained as another civil war was in sight. The political rivalry between Marcus Antonius and Octavian would bring about the end of the Roman Republic, and the beginning of the Roman empire with Octavian as the first Emperor.

**Joshua Inlander**

***Borderland Iceland***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

My project will present an argument as to why Iceland should be considered a borderland of the United States. My timeline will start with Iceland's discovery by the Vikings and I will trace its history up to a more modern era. With that being said, I will also provide an overview of the Viking civilization which will include their religion, politics and known discoveries. I will also be discussing some of the more recent archeological discoveries that help explain how those early settlers lived.

**History**

**Benjamin Knapp**

***Ancient Roman Divination***

**Co-Author(s): Rowan Kelley**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

Divination in Ancient Rome was about interpreting the will of the gods through looking for specific signs. Haruspices looked at entrails of sacrificed animals, while augurs observed natural signs like how birds acted. Romans looked for specific signs and took them to be important messages. Augurs and Haruspices held important roles in Roman society because they deciphered how the gods viewed the actions of the Romans, which guided important decisions Romans made. Since Romans believed these signed interpreted by Augurs and Haruspices were from the gods themselves, they were taken very seriously, and often used as a definite sign of if Rome should go to war or not. If the signs did not align, then the action was postponed or cancelled in fear of angering the Roman pantheon. Through the work of Augurs and Haruspices, the Romans could ensure that they were always doing right by their gods.

**History**

- Tiara Lewis** **History**  
***How Did Britain and Spain compare and Contrast in Their Treatment of Native Americans in Southeast America***  
 Faculty Mentor(s): Erin Stone, History  
 Lead Author Department: History  
 Session: Main Poster Session  
 Colonization and the need for slaves sparked a desire to explore new lands that had promised great wealth and new opportunities. Upon arriving at these new lands, the original settlers encountered a population of Native Indians that have lived there for centuries. With the news of new territory, countries sent out small groups of people to colonize, find slaves, and search for gold. Two key players in the movement for exploration, Britain, and Spain, both made their presence known in the New World. These two countries came to the New World, and both encountered the Native Indians living on the land. Using primary sources, the research will focus on the comparison of how the Native Indians were treated by Britain and Spain when they arrived in the new country of Southeast America. What goals did both countries want to achieve when coming to the new country. The research will discuss laws passed by both parties that either hindered the Native Indians or helped them prevail. Also, the study will examine how did the two new countries and the Native Indians live side by side or how they did not live side by side. What actions did they make to make sure they either had a good relationship with the natives or what actions caused them not to have a good relationship with their now Native neighbors. The point of the research is to have a better understanding of the different outlooks that Spain and Britain had on the Southeast Native

- Mars Madden** **History**  
***Queer Freedom in the Wild West***  
 Faculty Mentor(s): Erin Stone, History  
 Lead Author Department: History  
 Session: Dr. Amy Mitchell Cook's Session on "Women Gender and Sexuality Studies"  
 The Wild West in the mid to late 1800's existed as a borderland in the United States. This borderland status created an environment that was more or less unaffected by laws and societal bias. This freedom from law and bias created an environment where queer identities were allowed to be explored and flourish with little to no consequence. The Wild West existed as a safe haven for queer people, and a large amount of gay, lesbian, bisexual, and transgender people have been recorded in historical documents living in the Wild West.? This poster will use historical accounts and documents to explore what life was like in the Wild West for queer people, and how the status of the Wild West as a borderland allowed them to flourish and thrive. The portrayal of the Wild West in media will also be challenged in an attempt to showcase what life as a cowboy was truly like. The Wild West was a space for queer people to live without facing intense societal judgement, and because of this a large majority of those who went west were queer.

- Alexis Matrone** **History**  
***On Native Time: Alvar Núñez Cabeza de Vaca's Influence On South American Native Policy***  
 Faculty Mentor(s): Erin Stone, History  
 Lead Author Department: History  
 Session: Main Poster Session  
 The Narváez expedition was a colonization attempt led by Pánfilo de Narváez in 1527, leaving from Spain a six-hundred-man crew headed for the Florida coast. Fighting hurricanes, disease, and natives, the men began dying at a fast pace. Traveling places such as Cuba, Florida, through the Gulf of Mexico, and across the Mississippi River, only four men survived the journey, one of which included Narváez's second in command, Álvar Núñez Cabeza de Vaca, who left a detailed account of the decade long journey. Surviving with the natives for close to a decade, de Vaca watched the behaviors and cultural habits of the natives. Using this knowledge Cabeza de Vaca implemented new and humane Indian policies while acting as Governor of a South American province. By using primary sources giving a detailed account of the expedition and is later time in South America, this poster will outline the journey itself and show the great outcomes of the expedition. This expedition includes death and disaster but also brings with it mapping and knowledge; with supporting evidence, this poster will show the true beauty and horror of the Narváez expedition and reveal the journey's real importance to Florida and Native history.

- Hannah Matthews** **History**  
***The New Deal in Pensacola***  
 Faculty Mentor(s): Amy Mitchell-Cook, History  
 Lead Author Department: History  
 Session: Main Poster Session  
 During the Great Depression, President Franklin D. Roosevelt (FDR) introduced a series of federal programs and agencies called the New Deal. FDR's New Deal programs created job opportunities for the unemployed, improved the nation's infrastructure, and revived American morale. Cities from all over the country benefited from New Deal programs and projects, especially Pensacola. The Civilian Conservation Corps (CCC), Public Works Administration (PWA), Works Progress Administration (WPA), Federal Emergency Relief Administration (FERA), and the Civil Works Administration (CWA) served to improve the infrastructure of Pensacola and Escambia County. In total, Escambia County received approximately \$3,00,000 from FERA, CWA, and WPA for non-naval public works projects. The PWA built new schools in Escambia County from Bellview to McDavid. FERA sponsored adult education classes for Pensacola's African American citizens at Booker T. Washington High School, which was off of Texar Drive at the time. Fort Barrancas served as the headquarters for District "G" of the CCC and was the only training site for the agency in the entire state of Florida. The WPA completed a variety of public work projects such as road improvements, construction of new municipal facilities, and installed new drainage systems in the downtown area. The Naval Air Station went through major renovations in the 1930s because of funding through the New Deal. Over 1,5000 WPA workers built the hangars at Corey Field and Chevalier Field as well as the Air Station's administration building. The New Deal's legacy continues to impact the everyday life of Pensacola citizens.

**Andrew Morgan****History*****Russia's Fight for Control: Why the Caucasus Remains a Russian Borderland***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

Russia has been trying to gain a foothold in the Caucasus region for centuries. Beginning in the 16th century up to the modern era. Russia has fought for the territory. Russia needed to control this area for economic and strategic advantages. Other Empires fought for the same control, such as the Ottoman Empire and Persia in the 16th century and the modern era, Georgia and Chechnya. Specifically, the Caucasus borderland is essential as it provides Russia with access to the Black Sea and the Caspian Sea. Having the Caucasus region, Russia, or other countries could control the surrounding areas and provide more protection for their country. The strategic placement of the Caucasus provides a significant advantage for whatever country that controls it making it a borderland country.

**Alexandria Nash****History*****The Joint Success of Emperor Augustus and Empress Livia***

Co-Author(s): Alli Hays

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

The beginning of the Roman Empire began with the leadership of Emperor Augustus and his wife, Empress Livia. Although they both held a title, he was the public figurehead of the empire, and she conducted her work out of the public eye. The power dynamic between these rulers, who shared their public and private lives, is evident in the historical documentation on the pair. Emperor Augustus is regarded as one of the most effective rulers of Rome and his policies have been studied and interpreted for centuries. Meanwhile, most of the literature surrounding the life of Livia focuses on the beliefs and support she had in her husband. The joint efforts of this couple led to ultimate success during their reign over the Roman Empire.

**Russel Parsley II****History*****The Political Rivalries of the Late Roman Republic***

Co-Author(s): Mckenna Hoffman

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

Gaius Marius became a prominent political and military figure during the late Roman Republic; his bitter rivalry against Lucius Sulla would push Rome to civil war. Marius first showcased his prominence during the Jugurthine War. Sulla acted as Marius' quaestor and was responsible for capturing Jugurtha, and his hatred for Marius began when Marius took credit for capturing Jugurtha. Marius was elected consul after vanquishing the invading armies of the Cimbri and Teutones tribes. As consul, he began making radical reforms to elements of the Roman army known as "The Marian Reforms." Leading the Populares, he rivaled Sulla and the Optimates. These varying political rivalries between Gaius Marius and Lucius Sulla soon sparked civil war. The outcome of the civil wars

marked the beginning of the end for the Roman Republic. Marcus Antonius was a critical figure in the transformation of the Roman Republic into the Roman Empire. His rise to power stemmed from his allegiance to Julius Caesar. He served as a general and eventually became part of the Second Triumvirate next to Octavian (later known as Augustus), and Marcus Aemilius Lepidus. With the greed for power rising, relations were strained as another civil war was in sight. The political rivalry between Marcus Antonius and Octavian would bring about the end of the Roman Republic, and the beginning of the Roman empire with Octavian as the first Emperor.

**Geoffrey Ramirez****History*****"They Are Way Behind the Times:" The Continuing Social Advancement of Women in Pensacola, 1927 – 1939***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

**Jessica Rudo****History*****The Original Mavericks: How Pilot Implemented Improvements to the A1 Hydroplane Illustrated Innovation***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

American naval aviation began with the Navy's purchase of the Curtiss A1 Hydroplane in 1911. The Navy bought off on the prospect that flight could bring to the fleet, but it was up to Theodore "Spuds" Ellyson and John "Jack" Towers, the pilots assigned to the A1, to show the viability of naval aviation. These pilots forged a problem-solving culture and helped advance the technological foundations of modern aviation. Drawing on the A1's flight logs, as well as first-hand accounts from Glenn Curtiss, Captain Washington Chambers, Ellyson, and Towers, this paper argues that the development of technological advances in aviation, especially the Curtiss brand of planes, can be attributed to the ingenuity and innovation of the original maverick naval aviators.

**Isabella Rumbough****History*****Silent Resistance: Underground Churches in the Soviet Union (1920s-1940s)***

Faculty Mentor(s): Amy Mitchell-Cook, History

Lead Author Department: History

Session: Main Poster Session

The research presented acknowledges the existence of underground churches in the Soviet Union from the late 1920s until the 1940s during Stalin's Soviet Anti-Religious policies. The research intends to prove that underground churches were a more effective form of silent resistance by the religious in contrast to the open protests and executions of Russian martyrs.



**Isabel Russell****History*****The Christian Crusade: Mary Land Dillon and the Fight to Save America***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

Following World War II, women became involved in politics through grassroots activist groups, proclaiming ideology from both sides of the political spectrum. Scholars have tended to group women with corresponding political ideology or activist leanings. However, scholars in this area have not adequately addressed the diversity in seemingly cohesive groups. This does a disservice to those women who did not fit in to the expected mold, as it ignores their motivations for joining in grassroots activism.; This paper seeks to remedy this by considering Mary Land Dillon, a prominent socialite and activist in Pensacola during the 1950s and 1960s. Dillon's life illustrates the influence of tradition on many different political opinions. Dillon was married to a U.S. Navy officer and a devoted Episcopalian, and the prominence of tradition in each of these areas influenced her political opinions in the 1950s and 1960s. In the early 1950s Dillon and her husband divorced, and one would assume that this would cause her to remove herself from the public eye. However, after her divorce, Dillon became more vocal, often asserting her political opinions in the local newspaper and to prominent government officials in her letters. Through her correspondence between numerous church officials and government personnel, Dillon's methods and concerns come to life. This paper argues that, in her singlehood, Dillon found the freedom to enter the political sphere, and that she utilized the rhetoric of traditional Christianity and the patriotism of military culture to rationalize the Anti-Communist movement and segregation.

**Juliana Sims****History*****Exploring the Fandom: How Did Sphere Spread Across the Globe?***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

**Mackenzie Sutt****History*****Cults of Rome***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

Religion was an integral aspect of life within Roman society. The Romans were polytheistic and allowed for some degree of variation between worshippers; however, certain cults engaged in ritualistic practices that were considered obscene. The actions of these cults directly challenged the rigidity of Roman ideals, culture, and tradition. The cult of Bacchus, followers of the Roman god of wine and debauchery, frequently engaged in festivals referred to as Bacchanalia, during which members would have participated in lascivious sexual acts. The cult garnered notoriety for its promotion of sexual activity between members of any gender and social class. This subversion of Roman tradition resulted in the *Senatus consultum de Bacchanalibus*, the legal dismantling of the cult. The cult

of Magna Mater, also known as the Great Mother, dates back over 6,000 years and is one of the oldest 'religions' to date. The followers of this cult were mostly women as the men who chose to join this cult had to castrate themselves in front of Magna Mater's image or statue. Magna Mater was based on the goddess Cybele who was raised by wild animals; she had a tragic love story upon which her followers based sacrifices and traditions. These included many sacrifices and rituals as well as mass religious ceremonies that involved orgies and bloodshed, which led to a revolt against the cult by the Roman people.

**Angelica Tilton****History*****American Revolution Bicentennial Histories of Pensacola: A Case Study in Commemoration***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

During the 1970s, Americans marked the bicentennial of the American Revolution in various ways. Rather than celebrate a single national history, many Americans saw the bicentennial as a chance to preserve and share their local histories. In Pensacola, local elites, mostly white male business leaders, directed such commemoration activities, choosing to peddle specific versions of the city's history that would largely benefit the sectors of the community that they headed. In deciding which narratives to preserve and disseminate, community leaders often chose to focus on the city's Spanish, British, and Confederate heritage, while almost entirely ignoring the events of the American Revolution. Official activities of the bicentennial also largely excluded the stories of racial and ethnic minority populations in Pensacola. These chosen histories served to benefit local elites by promoting narratives and projects that boosted tourism and business. Drawing on information from contemporary newspaper articles, official government documents, and the personal papers of historic preservation project leaders. This paper serves as a case study in public memory. By looking at Pensacola's bicentennial activities, this paper reveals some of the successes, failures, and challenges to creating and sharing histories so that, ultimately, we can foster more successes in the field of public history. Notable issues that this paper discusses include funding, planning, and inclusivity.

**Carrie Ware****History*****Roman Gynecology***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

The medical recommendations for conception, pregnancy, and childbirth in Ancient Rome are strange by today's standards, but Roman medicine had its own methodology that will be examined in this project. The project will focus on two Roman physicians and writers: Soranus of Ephesus and Galen, who practiced medicine in the first and second centuries CE, respectively. Even though the ancient physicians Galen and Soranus depended on previous Greek philosophers and the accepted theories of anatomy and physiology, they also used their own methods of observation based on limited examples of the treatments they tried, in order to diagnose and treat medical conditions, extending to and including



**Caleb Wilder****History*****Tacitus and Josephus: Ancient Historians of the Germans and the Jews*****Co-Author(s): Trevor Tognarine**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

The historical writings of two ancient authors, Tacitus and Josephus, can help us understand the histories of both the Germanic tribes and the Jews in the first century AD, as they were living and working closer to the events about which they wrote and even witnessed some of the events. Josephus was involved in the conflicts between the Jews and the Romans, initially serving as a commander in the Jewish revolt and later defecting to the Roman side. He would go on to write about the events in a book titled, "The Jewish War" wherein he also wrote a summary of Jewish history leading up to that point. Seeing as how Josephus joined the side of the Romans, he was politically motivated to write them in a good light and so his writings are not entirely accurate. Tacitus's research on the other hand was dedicated to the understanding of the lands that were East of the Rhine River, then known as Germania. Tacitus's works are considered some of the best sources from ancient Rome, especially on the subject of Germania and the people who inhabited it, however his account can also be considered biased. He wrote of a free people who were full of honor and virtue, rather than savages and brutes as Romans believed.

**Melissa Williams****History*****A Tale of Two Counties: Spatial Consequences of School Desegregation in Northwest Florida***

Faculty Mentor(s): Jamin Wells, History

Lead Author Department: History

Session: Dr. Jamin Wells Session on "Reframing the Past: Historical Perspectives from the Gulf South"

**Nicholas Williamson****History*****High Offices of Roman Belief and their Power*****Co-Author(s): Becka Ware**

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: History

Session: Main Poster Session

During the Roman Republic, many religious offices held high esteem and power within Roman society. The gods to the Roman people were real and their signs could change all aspects of one's life. Many of the offices directly communed with the gods. These positions power was granted by the gods, not the people who elected them. The Pontifex Maximus was one of the highest offices in the Roman traditions and beliefs, and his office was later removed from the process of election. During the Republic, the Pontifex Maximus accepted many others into the priesthood. One of these orders being the Vestal Virgins. The Vestal Virgins are integral to Rome as Romulus and Remus's mother was a Vestal Virgin. These offices all held power and with this contributed to the life and religion found in the Roman Republic. Religion played a major role throughout all Roman's life and controlled many aspects of it. Shown by how the Roman Senate stopped all activities when a Vestal Virgin was struck by lightning. The members believed

it to be a sign from Jupiter himself. If a problem with the gods arose the people went to the Pontifex Maximus or the Vestal Virgins to help appease the gods and to pay tribute as well.

**Kayla Wilson****History*****Asian Immigration to the West Coast and California as a Borderland***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: History

Session: Main Poster Session

For my senior capstone project, I will be making/presenting a poster and research paper focused on Asian immigration to the West coast since 1882. The American West is more commonly referred to as a frontier, which has many of the characteristics of the borderlands covered in this course. California's diversity is comparable only to other borderland-like states such as New York, Texas, and Florida. In asking the question, "How has Asian immigration to the West coast impacted the region over time?", I will cover the hardships and victories of Asian-American immigrants in an American borderland.

---

## MUSIC

---

**Isabelle Areola****Music*****Concerto No. 20 in d minor, Movement I. W. A. Mozart***

Instrument: Piano

Lead Author Department: Music

Session: Musical Concerto

**Alexandra Blankenship****Music*****Carmen Phantasie, Georges Bizet; piano, four hands*****Co-Author(s): Alisha Hernandez**

Lead Author Department: Music

Session: Musical Concerto

**Caroline Bruns****Music*****Concerto in D Major I. Allegro, Franz Anton Hoffmeister***

Instrument: viola

Lead Author Department: Music

Session: Musical Concerto

**Nicole Daley****Music*****Five Greek Songs - Ravel; soprano***

Lead Author Department: Music

Session: Musical Concerto

**Andrew Gregg****Music*****Concerto No. 5, Op. 103, Movement I. Saint Saens***

Instrument: piano

Lead Author Department: Music

Session: Musical Concerto

<p><b>Joseph Herring</b>  <b>Horn Concerto No. 4 K.495 Mvt. 1 Wolfgang Amadeus Mozart (1756 - 1791)</b>  Instrument: french horn  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Jonathon Neff</b>  <b>Concertino for Tuba and Band by Frank Bencriscutto (1928-1997)</b>  Instrument: tuba  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>
<p><b>Jahni Joisin</b>  <b>Concerto No. 5 , Op. 103, Movement II. Saint Saens</b>  Instrument: piano  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Sarina Paolini</b>  <b>Concerto No. 2, Allegro Moderato, Joseph Haydn</b>  Instrument: violin  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>
<p><b>Harry Larimer</b>  <b>Peering Down the Laryngoscope: Cultivating Awareness of Dysphonia and its Life Changing-effects</b>  Lead Author Department: Music  Session: Lecture Recital</p>	<b>Music</b>	<p><b>Daniel Perkins</b>  <b>Concerto No. 5. Op. 103, Movement III, Saint Saens</b>  Instrument: piano  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>
<p><b>Max Levesque</b>  <b>Concerto in E Major I. Allegro Moderato</b>  Instrument: double bass  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Kelly Pohl</b>  <b>“Beethoven’s Other ‘Beloved,’ A Seminal Work of the Lieder Genre: ‘An Die Ferne Geliebte.’”</b>  Lead Author Department: Music  Session: Lecture Recital</p>	<b>Music</b>
<p><b>Morgan Macy</b>  <b>Concerto for Clarinet and String Orchestra, Gerald Finzi</b>  Instrument: clarinet  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Kelly Pohl</b>  <b>“I Canti della Sera” (Songs of the Night) by Francesco Santoliquido (1883 - 1971) 1. L’assiolo canta 2. Alba di luna sul bosco 3. Tristezza crepuscolare 4. L’incontro</b>  Instrument: tenor  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>
<p><b>Elisha Miller</b>  <b>Genius and Mental Illness</b>  Lead Author Department: Music  Session: Lecture Recital</p>	<b>Music</b>	<p><b>Katie Smith</b>  <b>The Musician’s Mind: How music can affect neuroplasticity in the post-trauma brain</b>  Lead Author Department: Music  Session: Lecture Recital</p>	<b>Music</b>
<p><b>Duncan Miller</b>  <b>Work to be Performed: Eglogue et Danse Pastorale Movements: Work is a single movement René Corniot (1901-1972)</b>  Instrument: alto saxophone  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Katie Smith</b>  <b>Signore ascolta, Tu che di gel sei cinta both from Giacomo Puccini’s (1858-1924) Turandot (1926)</b>  Instrument: soprano  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>
<p><b>Elisha Miller</b>  <b>Miss Manners at the Concert; Miss Manners at the Ballet; Miss Manners at the Opera</b>  Instrument: soprano  Lead Author Department: Music  Session: Musical Concerto</p>	<b>Music</b>	<p><b>Courtney White</b>  <b>Helen May Butler</b>  Lead Author Department: Music  Session: Lecture Recital</p>	<b>Music</b>

**Emilie Woltering****Music*****Songs of Love for Julia: How John Lennon used Music to Process the Death of his Mother***

Lead Author Department: Music

Session: Lecture Recital

**PHILOSOPHY****Joshua Durham****Philosophy*****The Mapuche Indians and the Arauco War: resistance to Spanish conquest in South America***

Faculty Mentor(s): Erin Stone, History

Lead Author Department: Philosophy

Session: Main Poster Session

The Spanish conquest of South America throughout the 16th century had already seen them successful in capturing the Inca empire, which spanned from modern day Peru down into Chile. The Spanish mission was to conquer all lands between the newly acquired Inca territory and the Strait of Magellan, exploit resources, and capture indigenous people to use as slaves. The Southern border of the Inca empire stopped at the Maule River, and on the other side of the Maule, is where the Mapuche territory began. Not only had the Mapuche been successful in resisting Inca subjugation, they would be one of the few groups able to successfully fight off Spanish rule as well. Continuous efforts by the Spanish to gain territory inside Arucania region, present day Chile and Argentina, and the resistance by the Mapuche result in the Arauco War. The more technologically advanced Spanish with steel armor, horses, and better weapons, including early guns and steel swords, had no trouble in conquering the vast empires of the Aztec and Inca, but they could never manage to conquer the Mapuche. The conflict between the Spanish and Mapuche lasted almost 350 years, and the Mapuche themselves would remain a free society until Chile and Argentina gain independence from Spain and eventually incorporate the Mapuche. This poster will examine how the Mapuche were successful in maintaining independence from Spain when larger, more powerful Indian nations failed to do so.

**WOMEN'S, GENDER & SEXUALITY STUDIES****Chrissie Banda****Women's, Gender, & Sexuality*****How The Methods Used To Eliminate Foot Binding In China Can Be Employed To Eradicate Child Marriage in Malawi***

Faculty Mentor(s): Amy Mitchell Cook, History

Lead Author Department: Women's, Gender, &amp; Sexuality

Session: Dr. Amy Mitchell Cook's Session on "Women Gender and Sexuality Studies"

**Chrissie Banda****Women's, Gender, & Sexuality*****The Pink Pussyhat: A Symbol of the Return of the Biological Essentialism and Racial Exclusion of First and Second-wave Feminism***

Faculty Mentor(s): Robin Blyn, English

Lead Author Department: Women's, Gender, &amp; Sexuality

Session: Dr. Robin Blyn's Session on "Feminist Regenerations Rereading Feminist Theory"

**McKenzie Campbell****Women's, Gender, & Sexuality*****Female Friendship within Romance Novels***

Faculty Mentor(s): Roz Fisher, Anthropology

Lead Author Department: Women's, Gender, &amp; Sexuality

Session: Dr. Amy Mitchell Cook's Session on "Women Gender and Sexuality Studies"

Romance novels have had a bad reputation from both feminists and anti-feminists alike. This genre has been dismissed as "mommy porn" or housewife smut with Fabio covers. Inside the pretty illustrated covers though are stories of women who are allowed to have sex without consequences, fall in love with who they want, and become the person they want to be. Another aspect of these novels that is often overlooked, except by avid readers of the genre, is the abundance of female friendships. Romance novels depict both positive and negative female friendships that are formed before and throughout the novel. This genre is often written by women, for women, and about women. This includes friendships that are full of rivalry, camaraderie, and growth. Just like the romantic relationship, the female friendships evolve as the heroine evolves. Romance novels have been seen as a fluff genre and as lesser because the genre is dominated by women. This includes a strong theme of female friendship that resonates with the reader.

**COLLEGE OF  
BUSINESS****ACCOUNTING & FINANCE****Brandon DeVries****Accounting and Finance*****Nature's Front Lines: The Battle of Nature Versus People Along Big Sur's Highway 1***

Faculty Mentor(s): Jasara Norton, English

Lead Author Department: Accounting and Finance

Session: Main Poster Session

Highway 1 depicts an epic battle between man and nature in Big Sur, California. The battle has caused millions of dollars in damage. Highway 1 runs along the Pacific coastline from Mendocino County to Orange County, California. The highway provides beautiful views of the Pacific Ocean and it gives access to many different resorts, cabin, and trails for tourists. Many people also live in the Big Sur area along the highway. The author Henry Miller claims that Big Sur still has a "virginal aspect" throughout its land and said that it was "an inviting land, but hard to conquer. It seeks to remain unspoiled, uninhabited by man" (Miller, 1957). Since the construction of Highway 1, Big Sur has been anything but "unspoiled" by man. As of October 2019, Highway 1 brings an

estimated 5,800,000 tourists to Big Sur each year (Rahaim, 2019). Tourists are very profitable for the economy of this area; however, tourists occasionally harm the nature of Big Sur. In a way, nature has fought back against the agitations of the humans in Big Sur. Several landslides and storms have closed portions of Highway 1 for prolonged periods of times. Therefore, there is a depiction of a battle between people and place. People want to use Highway 1 and Big Sur as a place of economic value for nature enthusiasts and vacationers. In response, the “wild factor” of Big Sur remains in the way that the natural elements of Big Sur complicate humans’ desires for the area.

## GLOBAL HOSPITALITY & TOURISM MANAGEMENT

**Alexandria DuPree**                      **Global Hospitality and Tourism Management**

***Applying Hospitality Theory to Reality in a Capstone Class***

**Co-Author(s): Kathryn Wisenbaker, Shelby Bassham, Brittney Anderson, Miriah Lasher, Alexandria DuPree**

Faculty Mentor(s): Alison Green, Global Hospitality and Tourism Management

Lead Author Department: Global Hospitality and Tourism Management

Session: High Impact Practice (HIP) Showcase

## MANAGEMENT & MIS

**Joshua Sauer**

**Management and MIS**

***Nike, Kaepernick, and Burnt Shoes***

**Co-Author(s): Richard Hawkins**

Faculty Mentor(s): James Mead, Marketing, Supply Chain Logistics, and Economics

Lead Author Department: Management and MIS

Session: Main Oral Presentation Session

Companies often hire celebrities to endorse their products or services. When correctly matched with an appropriate product, established research suggests that such endorsement greatly benefit both parties. In this research, I investigate how consumers’ perceive the endorsement deal between Colin Kaepernick and Nike, on the basis of perceived fit, to influence consumers’ willingness to pay, purchase, and their predicted post-purchase satisfaction of a Nike Hoodie. Using an experimental methodology where perceived fit was manipulated by describing Colin Kaepernick and Nike as either primarily from a sports or social justice lens, results indicated that perceived fit significantly influenced consumers’ predicted post-purchase satisfaction of a Nike Hoodie, but failed to affect their willingness to pay or purchase the product. Hence, the more a consumer finds a celebrity endorser to “fit” with the company it is partnered with; the more satisfaction a consumer is likely to experience after purchasing a product. This research enhances firms’ understanding related to how to select endorses for their brands as well as how they may wish to present or frame their partnership together to increase perceived fit.

## MARKETING, SUPPLY CHAIN LOGISTICS & ECONOMICS

**Isaac Mohr**

**Marketing, Supply Chain Logistics, and Economics**

***The U Choose Awards***

**Co-Author(s): Tyler Smith, Kevin Dulion, Nicole Waldo, Zachary Grant, Nicole Walker, Madison Alexander, Angelica Cope**

Faculty Mentor(s): James Mead, Marketing, Supply Chain Logistics, and Economics

Lead Author Department: Marketing, Supply Chain Logistics, and Economics

Session: Main Poster Session

The U Choose Awards is an independent student-led marketing research project, conducted by members of UWF’s American Marketing Association (AMA). In this project, AMA members developed a survey to measure the brand equity of businesses and organizations in the Pensacola area, based on surveys of University of West Florida students. An organization’s brand equity represents the goodwill and reputation it has earned from positive customer interactions. Organizations with high levels of brand equity tend to offer excellent product/service experiences to their customers. The results of U Choose Awards recognize the businesses and organizations that have successfully delivered exceptional value to the UWF student community. Further, this research seeks to enhance our understanding of how perceptions of brand equity change overtime.

**Nicole Waldo**

**Marketing, Supply Chain Logistics, and Economics**

***Consumer Perception on Food Product Packaging***

Faculty Mentor(s): James Mead, Marketing, Supply Chain Logistics, and Economics

Lead Author Department: Marketing, Supply Chain Logistics, and Economics

Session: Main Poster Session

Previous research regarding the Delboeuf illusion has found that food presented on a small plate tends to be perceived as representing a larger portion of food, because the food takes up more surface area of the plate, whereas on a large plate the same amount of food looks like a small portion because of the empty space on the plate. Further, related research has demonstrated that consumers tend to eat larger portions when a given food is presented on a large plate (compared to a small plate) because it appears as if they had been given a smaller portion (because it barely fills up the plate) whereas consumers tend to eat less when presented on a smaller plate for the opposite reason. Using this theory to predict healthfulness, we contend consumers will view the ingredient present on a round callout box as if it represents the food item is sitting on a virtual plate. The illusion will be explored using health claims or key ingredients that consumers want present in food such as protein and calcium compared to consumers may not want present in food such as sugar and fat. The goal of this research is to investigate if the Delboeuf illusion effect will manifest when health claims or key ingredients or displayed on a packaged food item with a smaller or larger callout box.



## MBA PROGRAM

**Wendy Funes**

**MBA Program**

***Short Learning Programs: A Path to Alternative Credentials, New Curricula, Master's Program Promotion and Alternate Revenue Streams***

Faculty Mentor(s): Melissa Brode, MBA Program

Lead Author Department: MBA Program

Session: Main Poster Session

Short Learning Programs (SLP) are a series of discipline specific graduate level courses that when packaged together provide participants with a credential to demonstrate their subject expertise (Williams, 2019). SLPs derived from bundling a series of Massively Open Online Courses (MOOCs) to form a credential for career advancement. MOOCs gave free, unlimited and open access to a variety of online courses. MOOCs evolved and organizations looked for ways to expand offerings. This evolution led to Nanodegrees and Micromasters that are two examples of SLPs. SLPs are often viewed as a bridge between undergraduate and formal graduate degree education. SLPs have created a path for students to earn credit that can be used towards earning a master's degree. SLPs provide a fast, flexible, and affordable career credential with completion times of three to six months, with cost ranging from \$800 to \$1,400, and with on-demand or multiple per year starts (Strategic HR, 2019). SLPs can provide different stakeholders with opportunities including: students who can capitalize on SLPs as an alternate credential for career development, faculty as a tool to provide a more nimble response to quickly changing industry needs, and colleges as a pathway to increase enrollment in master's programs as well as for the creation of an alternate revenue stream to provide supplemental funding. This research paper gives advantages of creating SLPs to different university stakeholders. In addition, some best practices and common pitfalls in creating SLPs in universities.

**Stacy Shrader**

**MBA Program**

***Hard Rock Hotel: A \$270 Million Feasibility Study***

**Co-Author(s): Morgan Jernigan**

Faculty Mentor(s): Gerald Goldstein, MBA Program

Lead Author Department: MBA Program

Session: Main Poster Session

The purpose of the Hard Rock feasibility study is to evaluate the project for potential points of failure through in-depth research of the existing market conditions, projected revenues and expenses, and analysis of the resulting data. The analysis found the total cost for the project will amount to \$270 million for the three revenue drivers. A projected breakeven will occur in year nine of operations according to our team's discounted cash flow analysis, which can be seen in the appendix. The team's research in marketing strategies and trends are used to provide strategic allocation of money. A key component in supporting the projected revenues is to properly direct marketing efforts to the target audience. Using the Facebook Audience Insights, the team was able to learn more about Hard Rock's audience including information about geography, demographics, and purchase behavior. The demonstration maximized advertising dollars while specifically getting Hard Rock ads into the hands of customers. The data analysis will project the revenues and expenses for the venues and evaluate

the sensitivity of key inputs impacting profitability. A decision tree, optimization analysis, risk analysis, and breakeven analysis provide a detailed look at which key variables will affect the return on investment and how those variables can be manipulated for maximized profitability. The recommendations and analysis models provided are based on the team's extensive research and are intended to offer the best solutions to avoid potential risks of the project, ensuring the proposed Destin West project will be a feasible investment.

## COLLEGE OF EDUCATION AND PROFESSIONAL STUDIES



### ADMINISTRATION & LAW

**Shane Durepo**

**Administration and Law**

***The Injustice of Insulin: An Analysis of the Insulin Price Reduction Act***

Faculty Mentor(s): Charles Penrod, Administration and Law

Lead Author Department: Administration and Law

Session: Main Oral Presentation Session

This project critically analyzes Senate Bill S.2199, otherwise known as the Insulin Price Reduction Act (IPRA), in order to determine whether this legislation will adequately improve access to this life-saving medication. The central purpose of this bill is the lowering of insulin list prices to the 2006 levels and barring insurance companies from refusing to cover insulin products that have been reduced to their 2006 levels. The IPRA will reduce the financial burden on those dependent on insulin, but will fail to significantly increase access to insulin. This methodology analyzes the market trends surrounding insulin from 2006 to present, consumers' average household income, access to insulin during the same time period, and the projected trend of insulin price and access from 2022 onward based on the implementation of the Insulin Price Reduction Act. Millions of Americans with diabetes have reported insulin rationing, which is highly dangerous and can result in diabetic ketoacidosis: a potentially fatal condition that has claimed 10 lives in the last 3 years due to insulin rationing. Without effective federal legislation regulating insulin access, this problem could continue unabated with lethal consequences.

**Kaley Jo Vandergriff**

**Administration and Law**

***Judicial Information Project***

Faculty Mentor(s): Heather Riddell, Communication

Lead Author Department: Administration and Law

Session: Main Poster Session

Proposed by Judge Goodman from Santa Rosa county, this project seeks to

decrease juvenile delinquency by framing information for juveniles in a new, more informal manner and sharing said information on specialized social media accounts not affiliated with or endorsed by pre-existing organizations. The information being shared will be the laws most commonly broken among our younger demographic in layman's terms, the consequences of said laws, and additional information to attempt to remedy the reasons these laws are broken. Research on frequency of certain crimes, which gender tends to offend in particular ways, and how age correlates to juvenile crime will help shape our efforts. The two target demographics are middle school and high school students in Santa Rosa County as well as parents of these students. Additionally, we seek to educate parents about the obstacles their children face, how to help prevent crimes, and resources within the school and justice system. Our goal is that through targeted education, court cases and referrals for our younger demographic will decrease because of an increased awareness of the content of laws, consequences of crime, and proposed remedies to some of the causes of juvenile crime.

## CRIMINOLOGY & CRIMINAL JUSTICE

### **Kayla Haley** ***Rape Shield Laws Across America***

Faculty Mentor(s): Jennifer Brinkley, Administration and Law  
Lead Author Department: Criminology and Criminal Justice  
Session: Main Poster Session

The Federal Rules of Evidence (FRE) have set limited admissibility regarding the character of victims, but the state exceptions all differ. The question is how different are the rules of evidence regarding a victim's character between all the states? Do they all follow the FRE and keep the amount of information allowed into the court room at a minimum and having it only pertaining to the case? It can add to the body of knowledge to compare and contrast the rules of evidence for sexual assault victims from all the states and see if there is a difference between states that are more conservative and progressive, determined by the most recent presidential election, and between the southern and northern states. The FRE narrows the information into court about a victim's prior sexual history to protect the victim. FRE 412 (b) allows information regarding any other physical evidence from another partner found on the victim's body and any prior sexual history with the defendant. Any information permitted into court besides what the federal rules allow could be considered an inefficient use of the court's time. Besides that, it is important to protect the victim due to the tedious circumstances they have been through. Discussing the victim's prior sexual history while in court can shame the victim and potentially bring trauma of the previous event to the surface and cause the victim to break down in the court room which in turn may delay the case making rape shield laws imperative.

### **Megan Henszey** ***Improving the University of West Florida's Recruitment and Support Efforts for Foster Care Students***

Faculty Mentor(s): Natalie Goulette, Criminology and Criminal Justice  
Lead Author Department: Criminology and Criminal Justice

### **Criminology and Criminal Justice**

Session: Main Poster Session

While obtaining a college degree can be a challenge for any student, it can be made even more difficult when students have a history of trauma. One common source of such trauma is involvement with the foster care system at any point before a child turns 18. Previous literature has found that educational attainment rates of foster care alumni are significantly lower than those of the general population. Several factors contribute to this disparity: residential instability, lack of support, emotional and behavior issues due to trauma, and lack of preparedness. While it is beneficial to address these needs before a child exits the system, some current research suggests that prospective and current college students may benefit from on-campus support groups for students who have been in foster care. These groups may offer emotional support, financial assistance, tutoring, networking opportunities, and many other services that may help improve the likelihood that foster care alumni will graduate from their college. This research project addresses these unique issues and proposes possible solutions for the University of West Florida. Through open-ended interviews with four college-aged individuals in Pensacola, Florida, the researcher gained valuable insights from foster care alumni who either strive to go to UWF, are currently enrolled, or have graduated from UWF. These participants provided valuable insights about their involvement with the foster care system and made suggestions for what services would be beneficial to them from a support group. This research project synthesizes data both from previous studies and from individuals within

### **Hannah Sims** ***Examining Perceptions and Use of Media Among Criminal Justice Students***

Faculty Mentor(s): Matthew Crow, Criminology and Criminal Justice  
Lead Author Department: Criminology and Criminal Justice  
Session: Main Poster Session

Overall, the public's trust in news media continues to decline (Fink, 2019). Prior research provides evidence that amount and type of media consumption impacts views of crime and justice issues among both the general population and students (Intravia, 2018; Intravia et al., 2017; Roche et al., 2016; Waid-Lindberg et al., 2011). Although a growing body of research has started to examine newer forms of media (e.g. social media), much of the extant literature focuses on the impact of traditional media. No known studies explore the impact of perceptions of the media on perceptions of crime and justice. The current study examines students' perceptions of news on both traditional media and social media, the various platforms in which students receive news to determine if these factors impact their views regarding issues related to crime and justice.

### **Quan Tran** ***Teen Dating Violence and Reporting Behavior***

Faculty Mentor(s): Hasan Buker, Criminology and Criminal Justice  
Lead Author Department: Criminology and Criminal Justice  
Session: Main Poster Session

Crime victims may report their victimization and seek help from officials (e.g., law enforcement, medical professionals, school officials) or their family members and friends. For certain types of victimization, including teen dating violence (TDV), victims are less likely to seek help from officials. TDV is a type violence

that occurs between two adolescents in a close relationship, and it encompasses physical violence, sexual violence/coercion or assault, psychological aggression/abuse, stalking, and cyber dating abuse. This particular study aims to contribute to the current literature on TDV victims' help-seeking behavior through the examination of a large data set collected from high-school and middle school students in three different states in the United States. It is essential and needed to explore and understand the dynamics of help seeking and reporting behavior among victims of TDV. It is even more important for a crime as underreported such as TDV.

## EDUCATIONAL RESEARCH & ADMINISTRATION

### **Bright Da-Costa Aboagye**                      **Educational Research and Administration** ***Universities as a Moral Community: Institutional Moral Identity Influence on Students' Unethical Conducts***

Faculty Mentor(s): Wisdom Mensah, Educational Research and Administration  
Lead Author Department: Educational Research and Administration  
Session: Main Poster Session

Institutions of higher learning play an instrumental role in laying the foundation for ethical behavior and socially responsible actions among students. In spite of the integrated ethics curriculum and ethical codes of conduct in institutions, unethical behavior among students continue to plague educational institutions. Based on the extant literature, several ethics scholars have argued that the perception of students about their institution's ethical climate and leadership practices contribute to student's immoral behavior. Drawing from social cognitive theory and using data collected from 80 respondents in selected universities in the Southeastern United States, this study seeks to investigate whether institutional moral identity is a significant predictor of college students' unethical behavior. More specifically, the researcher will examine the relationship between higher educational institution's moral collective efficacy, along with leadership moral conduct and student's ethical behavior. This study will provide novel theoretical contributions to the ethics and socio-psychology literature as well as inform practice and policies relative to the administration of ethical frameworks in higher educational institutions.

### **Sandra Ayivor**                                      **Educational Research and Administration** ***Postgraduation Residency Plans of Doctoral Recipients from Sub-Saharan Africa***

Faculty Mentor(s): Wisdom Mensah, Educational Research and Administration  
Lead Author Department: Educational Research and Administration  
Session: Main Poster Session

International students' population in the United States has steadily increased over the last decade. Upon completion, these students make postgraduation residency plans that have social and economic implications for both the countries of origin and their host nation. Though empirical studies on postgraduation plans of international students exist, researchers have not given much focus to sub-Saharan African doctoral students. Consequently, educational, governmental, and business leaders in sub-Saharan Africa and the United States lack detailed, descriptive, and country-based data necessary to make funding and

employment decisions. Using data from the NSCES Survey of Earned Doctorates and Lee's push-pull theory, this research-in-progress seeks to examine the postgraduation residency plans (i.e., whether to stay in the U.S. or in a foreign land including country of origin) among sub-Saharan African doctoral graduates from 2012-2017. Descriptive and inferential analysis will be based on the age, gender, marital status, dependent status, field of study of sub-Saharan African doctorates, and the economic status of their countries of origin (i.e., low income, lower middle income, upper middle income, and high income) from 2012-2017. The results indicated that males outnumbered females for all the years understudy. Although the number of males outnumbered females, a higher percentage of females (67%) as against 61.8% planned to stay in the U.S. after graduating in 2017.

### **Emily Kwaa**    **Educational Research and Administration** ***Developing a Communication Plan for Power Distribution Services, Ghana: An Action Research***

Faculty Mentor(s): Wisdom Mensah, Educational Research and Administration  
Lead Author Department: Educational Research and Administration  
Session: Main Poster Session

"The Power Distribution Services Ghana (PDS) is a company birthed from a strong collaboration of local Ghanaian business and technical expertise, other African experience and the experience of Meralco" (Power Distribution Services Ghana [PDS], 2019, p. 15). The PDS Ghana is a partnership with the Management and Staff of Electricity Company of Ghana (ECG). The organization has a Public Relations (PR) department well-staffed to handle its communication needs – both internal and external however, they do not have robust guidelines and yearly directional communication plan that will guide the team throughout each year, therefore the team is always reactive to issues (Bosumtwi, 2015). Another weakness is the lack of a crisis management or rapid response team within the organization to address crisis that might come up (Bosumtwi, 2015). There is also the issue of blame game and untimely communication because power is distributed to the nation by Volta River Authority (VRA), Ghana Grid Company (GridCo), and Power Distribution Services (PDS) formerly known as ECG (Electricity Company of Ghana [ECG], 2019; Power Distribution Services, Ghana [PDS], 2019). This, however, affects transparency and truthfulness of the organization. This has generated a lot of bashing from consumers on PDS and the consumers have lost trust and confidence in the services provided by the company (Bosumtwi, 2015). The sustainability Swot analysis helped to identify where PDS/ECG is and where it wants to be, the opportunities that it should take advantage of and the threats to minimize.

### **Joan Nkansah**    **Educational Research and Administration** ***Collaborative Learning and Dialogue: Co-constructing Knowledge in Classrooms***

Faculty Mentor(s): Mark Malisa, Educational Research and Administration  
Lead Author Department: Educational Research and Administration  
Session: Main Poster Session

This secondary research examined collaborative learning as an instructional strategy and classroom dialogue as approaches to co-constructing knowledge. Many classroom teaching and learning focus on the traditional "banking concept"

method of instructional delivery. This instructional delivery method relies heavily on the use of textbooks and traditional face-to-face lectures. Teaching in these classrooms become the emphasis instead of learning. Thus, there is no dialogue in the classroom to stimulate open-mindedness and logical and critical consciousness among students. The research drew a theoretical and conceptual framework using pragmatism as the philosophical thought and social interdependence theory to emphasize the importance of the social context in the classroom learning process. A systematic literature review was conducted using scholarly articles and books to gather relevant data. Based on the literature reviewed, the researcher developed an annotated bibliography for easy identification of the similarities and differences in literature. After the researcher had identified the common themes, a literature synthesis was created to ensure the credibility and reliability of the findings. The researcher identified five components (positive interdependence, promotive interaction, individual accountability, the appropriate use of social skills, and group processing) as the factors that promote classroom collaboration, dialogue, and co-construction of knowledge. The analysis also identified certain limitations of collaborative learning, such as social loafing and student personality differences. The research further concluded that irrespective of these limitations, effective collaborative learning and classroom dialogue in the broader sense influence students' learning outcomes by enhancing their cognitive development and social skills and developing knowledge and understanding.

## INSTRUCTIONAL DESIGN & TECHNOLOGY

### **Chloe Diehl** **Instructional Design and Technology** ***Evaluating the Sustainability of a Community-Based Non-profit Program.***

Faculty Mentor(s): Holly Handley, Instructional Design and Technology

Lead Author Department: Instructional Design and Technology

Session: Main Poster Session

This poster will present the process and results of a Performance Improvement project. The researcher will describe the process and results of a summative evaluation.; In 2018, a small charitable organization created a new programmatic effort to address the employment gap for neurologically divergent job seekers. The program initially developed services focused on increasing employment outcomes. By delivering direct skills instruction, participating individuals could enhance their chances for finding competitive pay employment. Key stakeholders felt the program did not differentiate itself from other local agencies; therefore, the program director performed a needs analysis. After the initial analysis, the organization decided to change the targeted population. The organization redefined its mission, vision, processes and procedures. After operating for an additional year, the goals of the organization were still not being met. Following the principles of Performance Improvement, the researcher performed a comprehensive summative evaluation. The evaluation used the seven steps of "Evaluating Impact" as outlined by Ingrid Guerra-Lopez (2007) based on The Organizational Elements Model (OEM) as developed by Kaufman (2000, 2006). The steps of the performance improvement evaluation followed were: 1- Identifying Stakeholders and Expectations; 2- Determining Key Decisions and Objectives; 3- Deriving Measurable Indicators; 4- Identifying Data Sources; 5- Selecting Data Collection Instruments; 6- Selecting Data Analysis Tools; 7-

Communicating Results and Recommendations; The researcher will present the findings in a data-driven framework outlining the recommended solutions to move the organization forward to meet the needs of the identified stakeholders and the community.

## SOCIAL WORK

### **Dana Dillard**

#### ***Childhood Burn Injuries: The Parent Perspective***

#### **Co-Author(s): Stacey Kolomer**

Faculty Mentor(s): Dana Dillard, Social Work

Lead Author Department: Social Work

Session: Main Poster Session

Interventions for burn-injured children (BIC) largely focus on the child with the physical injury while consideration for family systems appears incidental. When considering BIC within the context of a family system, it is reasonable to expect the injury to engulf everyone. The literature emphasizes the acute and lasting physical and emotional impact of burns. Moreover, research suggests parents/caregivers of pediatric burn patients (PPBP) experience an emotional response to the incident that is often complicated by physical absence from their other children. This exploratory study fills a gap by engaging the unique perspective of the PPBP and posits direct implications for essential program enhancement/development. PPBP attending a family program participated in semi-structured interviews (N=11) guided by the research question: What are the experiences of PPBP? Interviews involved queries regarding the burn incident from injury to present. Data were analyzed using van Manen's hermeneutic phenomenological approach. Findings supported PPBP's unique experience with mutual painful insights: parental guilt; sensory experiences; unknown prognosis and medical treatment expectations; physical/emotional health problems; family members' insensitivity; managing the cruelty of others; isolation; marital strains; and sibling tensions. Families also reported positive outcomes: strength of informal support networks; empowerment through educating others; and creating allies. PPBP emphasized the benefit of meeting families who also endured a burn injury and the importance of mutual support. Programs should address the needs of all family members, not just BIC. In order to mitigate the impact of burn trauma, the family system impact remains a critical primary consideration for research and interventions.

### **Social Work**

### **Jarius Janvier**

#### ***Initial Assessment of a Poverty Simulation for UWF Students***

Faculty Mentor(s): Erin King, Social Work

Lead Author Department: Social Work

Session: Main Poster Session

This presentation will cover the implementation of an interdisciplinary poverty simulation hosted at the University of West Florida on February 17th, 2020. Students and faculty from the departments of Nursing, Health Promotion, Social Work, Education, and Criminology/Criminal Justice participated in a one-hour simulation of diverse family types living in poverty over the course of one month. A pre-test and post-test related to students' perceptions of poverty were

### **Social Work**



administered, and 10 focus groups were conducted with students immediately following the simulation. Initial results of the data collected will be presented, along with implications for the use of poverty simulations on college campuses will be discussed.

**Devon Parsch**

**Social Work**

***Connecting Undergraduate Disciplines through Caring for the UWF Community Garden***

**Co-Author(s): Rowan Freitas, Ashlee Nigro, Theodore Reese, Grace Ward**

Faculty Mentor(s): Jill Van Der Like, School of Nursing

Lead Author Department: Social Work

Session: Main Poster Session

Across the globe, more and more communities have chosen to implement gardens in accessible areas for public use. This popular trend has opened conversations on the benefits of these community gardens. Our research team has decided to explore specifically the effects of these areas on the feelings of college-aged students. To do this, our research team will have willing participants experience The UWF Community Garden during one of the planned garden workdays. The DASS 21 questionnaire will be administered via Qualtrics before the gardening workday, and participants will verbalize one word for feelings after the workday. After acquiring this information, our research team hopes to see a correlation between a garden experience and levels of depression, anxiety, and/or stress. This information will then contribute to the discussions of the benefits of community gardens. In turn, our research team hopes this will bring awareness to The UWF Community Garden and others.

**Eden Ridgeway**

**Social Work**

***Love, Loss, and Change: An Ecocritical Analysis of Appalachian Literature***

Faculty Mentor(s): Jasara Norton, English

Lead Author Department: Social Work

Session: Main Poster Session

The Appalachian mountain region is near to the hearts of many Americans – in it, these Americans see beauty and simplicity. To visit Appalachia is to return to a more authentic and more natural way of life. According to the National Park Service, over eleven million people visited Great Smoky Mountains National Park in 2016, each intending to experience the natural beauty of the park. Local residents of the region, however, have always viewed Appalachian nature in a far more different, intimate, and complex way. This analysis seeks to understand these complex relationships through Appalachian nature writing, particularly throughout the span of history. For this study, I conducted an ecocritical analysis of the themes of various Appalachian texts, including Native American folklore, Appalachian folk music, and contemporary literature, specifically as they relate to nature over time. I found that perspectives were widely diverse, but some consistent themes in historical texts, especially folk lore, demonstrate a mix of distrust and fear of nature while also valuing the land for what it provides. In more recent works, themes indicate a disillusionment with industry that destroys nature, which is dearly valued as home. Some attitudes remain consistent, but the circumstances of these attitudes have changed. The implications of this analysis are interesting considering the impact of climate change and environmental crises on the Appalachian region, and these crises have reached a point where they are significantly affecting the people of the Appalachians' social and cultural relationships with their landscape.

# HAL MARCUS COLLEGE OF SCIENCE AND ENGINEERING



## BIOLOGY

**Olivia Alexander**

**Biology**

***Investigations of Gopher Tortoises on and around the UWF Campus***

**Co-Author(s): Cody Nash, Alexandra Fox, Alexandra Fox**

Faculty Mentor(s): Philip Darby, Biology

Lead Author Department: Biology

Session: Main Poster Session

The gopher tortoise (*Gopherus polyphemus*) is considered a keystone species in longleaf pine savanna ecosystems because of the burrows they dig. Their burrows have been documented to support over 300 other species by providing shelter once the tortoise has abandoned it. In this project, we have begun monitoring this protected species on the University of West Florida campus and on private land in the Pensacola area using motion sensitive cameras. These cameras are set up facing the burrow entrance to capture any activity around the burrow. Thus far, the cameras have captured deer, rabbits, coyotes, dogs, birds, and people, as well as the resident gopher tortoises. Some of our images indicate that several species may be attracted to the burrows, even if they do not enter them. Calipers are used to measure the burrow height and width at two distances (25cm and 50cm) inside the burrow, which can then be correlated to the size of the tortoise. We hope to continuously monitor active burrows to help obtain a better understanding of tortoise behavior and their relationship with the burrow, including seasonal changes and short-term differences in activity related to weather. Capturing images of other species around the burrows can increase our understanding of the broad range of species drawn to them. Cameras may also record human disturbances to the burrows. With a better understanding of the tortoises, better policies and regulations can be put in place to help protect the species.

**Lauren Bantista**

**Biology**

***Estimation of Thermal Niche Requirements for the Regal Demoiselle,***

***Neopomacentrus cyanomos: Possible Strategies for Management an Invasive Fish Species in Florida***

Faculty Mentor(s): Wayne Bennett, Biology

Lead Author Department: Biology

Session: Main Poster Session

In 2014, the regal demoiselle, *Neopomacentrus cyanomos*, a native of the Indo-West Pacific, was reported on a coral reef south of Veracruz, Mexico in the Southern Gulf of Mexico. The dispersal mechanism of the species is unclear, but

the most probable routes include, oil platform relocation, bilge discharge, and/or aquarium release. Relatively little is known about this species or what impact it may have on the local north Florida environments. Previous studies have shown that rising sea surface temperatures and widening distributions of invasive fish bring with them novel diseases and parasites that may decimate native fish fauna. The colonization range in the northern Gulf of Mexico will no doubt be limited by low water temperatures experienced during the winter season. Average winter temperatures of 15-20°C in the northern Gulf of Mexico could slow down the distribution and establishment of the regal demoiselle, but to date there are no empirical data on the thermal requirements of regal demoiselle. In this study, the Critical Thermal methodology will be used to determine 1) upper and lower acclimation responses, 2) estimate total thermal niche requirements, and 3) predict the potential for the species to establish reproducing populations in the Gulf of Mexico and along the United States east coast. Understanding the potential distribution of an invasive species is the first critical step in developing management and mitigation strategies in dealing with exotic introductions in wildlife. Funding for this project is provided by UWF OUR.

**Charles Bercier** **Biology**  
**Oral Hygiene Regimes: How Oil Pulling and Conventional Mouthwashes Affect Dental Biofilms, Focus on Cariogenic Streptococci**

Faculty Mentor(s): Joe Lepo, Biology  
 Lead Author Department: Biology  
 Session: Main Poster Session

This research addresses whether nontraditional oral hygiene regimes provide antimicrobial efficacy comparable to commercially available synthetic mouthwashes. A common interest among holistic communities is “oil pulling”—a practice originating in ancient Ayurveda oral hygiene. It consists of rinsing the mouth with vegetable oils, of which sesame and coconut oils are preferred, to enhance oral hygiene. This study focused on whether oil pulling reduces cariogenic *Streptococcus mutans* to the same degree as does common mouthwash. Volunteers above age 18 participated in this UWF-IRB-approved study. Five participants provided oral rinses of 20mL with sterile saline before and after treatments of Listerine®, or pulling oil; the rinses were transported to the lab to test for *S. mutans* and other oral bacteria. After the first round of treatments were complete, a 1-week “reset” period allowed normal microbial flora to re-establish, after which another treatment regime began; the cycle continued until all participants underwent all treatments. Samples were plated on a highly selective medium, favoring growth of *S. mutans*. Samples were also used to inoculate two broth dilution-tube series consisting of 1) a non-selective general medium TSB, and 2) a *S. mutans*-selective medium. Preliminary trials of this protocol showed that Listerine® reduced *S. mutans* and other oral bacteria by over 1-thousand fold. Furthermore, almost all visible background growth was eliminated from the media plates after Listerine® treatment.

**Matthew Blum** **Biology**  
**Nucleophilic Aromatic Substitutions of 2-Fluoropyridines**  
**Co-Author(s): Aimee Phillips**

Faculty Mentor(s): Tanay Kesharwani, Chemistry  
 Lead Author Department: Biology  
 Session: Main Poster Session

Pyridines are commonly found scaffolds in many pharmaceuticals. Regioselective introduction of substituents in the pyridine core structure can alter the biological activity of small molecules. In addition, diverse substituents can further increase the possible functions of the drug as functionalization can lead to effective ADMET properties (Absorption, Distribution, Metabolism, Excretion and Toxicity). This research explores nucleophilic aromatic substitution pathways of disulfide compounds onto various 2-fluoro substituted pyridine core structures. Aim of our new and improved green synthetic pathway is to reduce waste, harmful chemical use, and time of reaction. Successful sulfur pyridine synthesis can lead to more effective antitumor, antiinflammatory, antiviral, antimicrobial, antioxidant, and analgesic organic small molecule drug candidates.

**Rebecca Boutwell** **Biology**  
**Heavy Metal Concentration Mapping in the Gulf of Mexico using ICP-OES**  
**Co-Author(s): Jeffery Wright**

Faculty Mentor(s): Karen Barnes, Chemistry  
 Lead Author Department: Biology  
 Session: Main Poster Session

In 2010, the Deepwater Horizon oil spill took place in the Gulf of Mexico and experts later found a correlation of increased heavy metals in marine wildlife with the contamination. More specifically, the heavy metals have been studied closely at the Baton Rouge annex to the Mississippi River estuary. This project focuses on the study of these heavy metals in the Gulf of Mexico and its marine wildlife. Several water samples were obtained from various locations and analyzed using inductively coupled plasma optical emission spectrometry (ICP-OES). ICP-OES is a technique that analyzes samples to determine the composition of elements using plasma and a spectrometer. This project processed the water samples using U.S. EPA Method 200.7.

**Lacey Bowman** **Biology**  
**Oyster Ecology: Understanding Factors Affecting their Respiration, Excretion, and Microbiome**

**Co-Author(s): Kylyn Kay, Jane Caffrey, Lisa Waidner**  
 Faculty Mentor(s): Jane Caffrey, Biology  
 Lead Author Department: Biology  
 Session: Main Poster Session

Oysters are a commercially important food source and provide a crucial ecological service through water filtration, thus, water quality in estuaries. Due to the tolerance oysters have to wide salinity and temperature ranges, the Pensacola Bay System (PBS) is an excellent area to study the respiration, excretion, and biofilm composition of oysters throughout an interconnected estuarine system. Looking at these biological components of oysters can help to illustrate the changes in water quality between water bodies in the PBS. These assessments of water quality are important in understanding the health of the ecosystem and protecting people who utilize the PBS for food and recreation. Oysters were collected from different areas in the PBS and oxygen and ammonium concentrations were monitored over a one-hour period. Additionally, biofilm and liquor samples were collected from the oysters and plated to evaluate the presence of *Vibrio* sp., particularly the pathogenic *Vibrio vulnificus* and *Vibrio parahaemolyticus*. Direct count were used to look at the numbers of bacteria in

biofilms. It is expected that there will be little difference between respiration and excretion levels in oysters between different sites. However, it is likely that oyster biofilm composition will vary greatly depending on the site location.

**Andrew Brown**

**Biology**

***Bacteriophage Hunting in Greater Pensacola Beach Using Experimental Host *Psychrobacter Nivimaris****

Faculty Mentor(s): Hui-Min Chung, Biology  
Lead Author Department: Biology  
Session: High Impact Practice (HIP) Showcase

**Madison Buffington**

**Biology**

***Analysis of Nutrient Concentration and Chlorophyll-a Content of Seagrass and Epiphytes in Santa Rosa Sound***

Faculty Mentor(s): Jane Caffrey, Biology  
Lead Author Department: Biology  
Session: Main Poster Session

Seagrass such as *Thalassia testudinum* and *Halodule wrightii* rely on photosynthesis and nutrient uptake for growth in shallow waters along Santa Rosa Sound. Seagrass beds serve as a nursery and main habitat for juvenile development of fish and invertebrate populations. They play a key role in coastal nutrient cycling and long-term carbon storage (blue carbon). Previous research has suggested that an increased density of epiphytes on benthic seagrass blades may be a biological indicator of eutrophication in the absence of mitigating factors. The loss of these aquatic plants negatively affects the natural biodiversity of the Santa Rosa Sound resulting in a lack of resources to sustain higher trophic levels. My research will examine chlorophyll-a and nutrient content of seagrass blades, the surrounding water, and their attached epiphytes at three locations in Santa Rosa Sound. Sites have been chosen to examine spatial variability and possible factors inhibiting growth of the beds. These sites will be sampled for water quality using a YSI meter, grab samples for nutrients and chlorophyll-a content.

**Courtney Butler**

**Biology**

***Determination of Off-Flavor Source in Beer***

Faculty Mentor(s): Karen Barnes, Chemistry  
Lead Author Department: Biology  
Session: Main Poster Session

A novel carbocyclization method via electrophilic carbon was optimization for synthesis of functionalized benzo[b]thiophenes and isoxazoles derivatives. The electrophilic carbon reaction uses  $FeCl_3$  and dichloroethane to generate functionalized benzo[b]thiophene derivative or functionalized isoxazole derivative. The development of diverse methods for new carbon-carbon bonds is necessary for pharmaceuticals. Risperidone, an atypical antipsychotic, employs benzo[b]thiophene as the core structure, and current studies have determined benzo[b]thiophene as an effective anticancer, antibacterial, and antidepressant for future applications. Isoxazole derivatives are well known for nonsteroidal anti-inflammatory drug and beta-lactamase resistant antibiotics like flucloxacillin, cloxacillin, and dicloxacillin.

**Gabriela Castaing**

**Biology**

***Investigating the Effect of Zebrafish Gene Expression When Affected by Inflammation***

**Co-Author(s): Jacob Diaz, Stephanie Whitfield, Dane Zimmerman**

Faculty Mentor(s): Evin Magner, Biology  
Lead Author Department: Biology  
Session: Main Poster Session

The gene *fgf2a*, or fibroblast growth factor 2a, helps control fibroblast growth and facilitates fibroblast growth factor receptor binding activity in *Danio rerio*, or Zebrafish. The purpose of this experiment is to determine if *fgf2a* expression is affected by inflammation. These model fish were also treated with green tea to determine if it had the ability to reduce the effects of inflammation. To accomplish this PCR, primers were first designed to amplify the gene for *Danio rerio*, the Zebrafish, and *Lagodon rhomboides*, the Pinfish. RNA was collected from injured zebrafish fin tissue at time points 0, 24, and 48 hours post-injury and cDNA was subsequently created from RNA samples. Next, a PCR was set up with the Zebrafish primers and gel electrophoresis was performed on these primers to determine what time point had the greatest expression of the gene. Using the most gene expressive time point, a PCR with the pinfish primers was completed and a Gel electrophoresis was run.

**Connor Catalani**

**Biology**

***Determining the time-kill kinetics of benzo[b]thiophenes against Gram-positive bacteria***

Faculty Mentor(s): Prerna Masih, Biology  
Lead Author Department: Biology  
Session: Main Poster Session

Due to the increase in antibiotic resistance of many disease-causing pathogens, there is a growing demand for novel antimicrobial drugs. In our previous studies, cyclohexanol and a halogen (bromine and chlorine) containing benzo[b]thiophenes exhibited potent antimicrobial activity against Gram-positive bacteria, including *S. aureus* using microdilution assay which provides the information about minimum inhibitory concentration (MIC) of the antimicrobial compound. However, the microdilution assay provides an end-point result which does not provide enough information about the antimicrobial activity. The purposed time-kill assay will further develop our understanding of the kinetics of killing bacteria by evaluating bacterial growth at different time points at several concentrations of the benzo[b]thiophenes<sup>2</sup>. Thus, performing time-kill assays will provide a broader range of information, such as time and concentration dependency of our antimicrobial compounds against *S. aureus*<sup>2</sup>, while enhancing our understanding of the mode of action of benzo[b]thiophenes as bactericidal or bacteriostatic. ; ; References ; ; Mueller M, de la Peña A, Derendorf H. Issues in pharmacokinetics and pharmacodynamics of anti-infective agents: Kill curves versus MIC. *Antimicrob Agents Chemother* 2004;48:369-77.; Amsterdam, D. Susceptibility testing of antimicrobials in liquid media. In *Antibiotics in Laboratory Medicine*, 4th ed.; Lorian, V., Ed. Williams & Wilkins: Baltimore, MD, 1996.

**Catherine Churchill****Biology****Identifying the Effects of Microplastics and Ocean Acidification on Oxidative Stress in *Donax variabilis***

Faculty Mentor(s): Peter Cavnar, Biology

Lead Author Department: Biology

Session: Main Poster Session

*Donax variabilis*, or Coquina clam, is a small bivalve native to intertidal, southeastern America. They use filter feeding to absorb nutrients, which makes them vulnerable to environmental toxins and pollutants that can accumulate and concentrate within tissues. Microplastics are 5mm particles that are ingested unintentionally by many organisms, and can potentially increase oxidative stress. This is a dangerous imbalance of free radicals and antioxidants, which is often used as an overall indicator of organismal health. Previous studies in other bivalves have shown that exposure to microplastics causes cellular stress and altered gene transcription related to apoptosis. This study analyzes the potential correlation between introduction of microplastics and increased oxidative stress using the DCFDA/H2DCFDA Cellular Reactive Oxidative Species Assay and fluorescence spectrometry. Our data suggests that 10Qm microplastic beads increase cellular oxidative stress. 5Qm and 1Qm sized particles were also tested with variable success due to the natural fluctuations in clam oxidative stress levels. In conclusion, the findings of this study expand on the idea that toxic pollution can increase the levels of oxidative stress in *Donax variabilis*.

**Joshua Cook****Biology****Exercise-Induced Neuroprotection Against Combinatory Effects of Metabolic Distress and Alzheimer's Disease****Co-Author(s): Yongchul Jang, Madeline Wei, Benny Segovia Ruiz, Joung Bo Ko, Matthew Hayslip, Stephan Quintin**

Faculty Mentor(s): Youngil Lee, Movement Sciences and Health

Lead Author Department: Biology

Session: Main Poster Session

There are many metabolic disorders (MD) that have been shown to play a significant role in neurodegeneration, such as obesity and type 2 diabetes. These metabolic disorders are often found coinciding with diseases such as Alzheimer's Disease. It has also been shown that Endurance exercise (EXE) can be used as a neuroprotective mechanism against MD. Unfortunately, the exact molecular mechanism by which EXE protects against MD is unclear, especially in the brain. In this study, we investigated if exercise-induced neuroprotection is associated with mitochondrial function, autophagy, and cellular senescence, using a mouse model of obese-type 2 diabetes induced by the combination of a long-term high-fat diet with a single injection of streptozotocin. C57BL/6 female mice (8 weeks old) were randomly divided into three groups: normal diet (CON, n=11), high-fat diet + streptozotocin (HFD+STZ, n=11) and high-fat diet + streptozotocin + endurance exercise (HFD+STZ+EXE, n=11). The mice assigned to the HFD+STZ+EXE group performed treadmill running exercise for 60 min/day, 5 days/week for 15 weeks, with the speed of running progressively increased throughout the training periods. Our data show that EXE restored mitochondrial respiratory function and turnover by increasing biogenesis and mitophagy. EXE also promoted autophagy and prevented premature aging compared to HFD+STZ. Surprisingly, HFD+STZ suppressed apoptosis levels below control, but

EXE reversed it back to a control level. In conclusion, our study suggests that exercise is a potent nonpharmacological treatment that attenuates metabolic disorder-induced neurodegeneration.

**Madikay Faal****Biology****Synthesis of a Carbocation Intermediate of a Metalloenzyme Mimic****Co-Author(s): Christina Pizza, Kevan English, Ian Schneider**

Faculty Mentor(s): Ajay Lajmi, Chemistry

Lead Author Department: Biology

Session: Main Poster Session

Metalloenzymes are vital in biochemical processes. They act as biological catalysts to carry out a hydrolytic reaction in cells. Enzyme mimics are minimalist synthetic molecules that resemble the structural and functional properties of an enzyme's active site. They are commonly used as models due to their exceptional tolerance to experimental conditions and ultimately, they could be used as more efficient mimics for drug discovery. The coordination sphere of Zn(II) in the carboxypeptidase-A metalloenzyme active site was mimicked using a macrocyclic polyamine, namely, 1,5,9 - Triazacyclododecane (TACD). The goal of this project is to synthesize the guanidinium-like intermediate tosylate salt which will provide a much greater understanding of the low yield of TACD produced in further steps through its X-ray crystallographic and other structural studies. It is proposed that the guanidinium-like salt may be sufficiently stable in the presence of a bulky tosylate counterion (-OTs). The synthesis of this compound was done through the N-alkylation of hexahydropyrimidopyrimidine with 1,3-propanediol using an SN-2-type reaction mechanism with a strong base in an aprotic solvent. Spectroscopic methods including <sup>1</sup>H NMR, <sup>13</sup>C NMR and gas chromatography-mass spectrometry (GC-MS) were used to characterize the product, and preliminary spectroscopic data suggested that we have most likely synthesized a product with alkylation of one of the two amines in the starting material. Further work is necessary for confirmation of the product. Additionally, we plan on X-ray structure determination in hopes of understanding the stability of this product.

**Amy Fellgren****Biology****A Dietary Examination of Least Terns (*Sternula antillarum*) Through the Extraction and Analysis of eDNA****Co-Author(s): Justine Whitaker**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Least terns (*Sternula antillarum*) are endangered shore birds that inhabit the southern coast of North America and the northern coast of Mexico. In the winter months, Least terns migrate to tropical waters in Central and South America. The diet of Least terns is rather varied, consisting of primarily fish, crustaceans, and insects. The foraging behavior of the species involves hovering over the water and diving below the surface to catch prey. This behavior can be recorded in terms of fish-drop data (i.e. the number and species of fish that are dropped by hovering individuals). In this study, the fish that comprise the diet of the Least tern will be determined through metabarcoding techniques, and these data will be compared to previously recorded fish-drop data. Least tern fecal samples



were collected during the summer months of 2018 and 2019 and the samples were subjected to eDNA extraction using a Qiagen DNeasy Blood and Tissue Kit. The extracted DNA was amplified using MiFish Polymerase Chain Reaction (PCR) techniques to specifically target the fish eDNA in the samples. Agarose gel electrophoresis was used to confirm the presence of fish eDNA in the samples. Samples that display positive results for the presence of DNA will be sequenced and analyzed to identify fish species.

**Michaela Franklin**

**Biology**

***Suicide Patterning in Florida's Medical Examiner District 1: Using Geospatial Data to Inform Forensic Recoveries of Suicide Scenes***

**Co-Author(s): Elizabeth Barrett**

Faculty Mentor(s): Allysha Winburn, Anthropology

Lead Author Department: Biology

Session: Main Poster Session

Suicide is one of the leading causes of death in the United States and is prevalent worldwide. Though there is no clear resolution to this deadly issue, any research into regional trends in suicide patterning could prove valuable to understanding its subtleties. Medical examiners and coroners compile records on deaths investigated within the medicolegal system, thus providing a resource for studying regional trends in where and how these deaths occur. Further, as medicolegal personnel are the people most frequently tasked with recovering and analyzing the human remains from these scenes, they stand to benefit from an enhanced knowledge of suicide scenes. In this study, we will collect data from the digital records of Florida's District One Medical Examiner on all suicides investigated by that office over the course of the past ten years (estimated n=1400 cases), including: the location of the suicide scene (i.e., address or GPS coordinates); a qualitative description of the scene location (e.g., "within the home"); and the modality of the suicide (e.g., hanging). We will perform Geographic Information System (GIS) analyses of the geospatial data, producing a map of all suicide scene locations in Florida's District One from 2009-2019. Geospatial patterns in suicide modalities, scene descriptions, and overall landscape, if identified, will be analyzed (e.g., clustering of particular types of suicide scenes in urban vs. rural locales). The resulting geospatial data on suicide scene patterning will have the potential to assist medicolegal personnel with the effective location and processing of future suicide scenes in the region

**Tristyn Garza**

**Biology**

***Quantifying Microplastic Pollution in Fjords Along the Western Antarctic Peninsula***

**Co-Author(s): Justine Whitaker**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Plastic cannot easily be broken down in natural ways, such as ultraviolet radiation, however, plastics can be physically broken down from wave action or abrasion. When plastics are broken down into pieces less than 5 millimeters in size, they are then called microplastics. Microplastics can be manufactured for items such as face wash or toothpaste, or be components of larger plastics that have broken off due to physical degradation. Microplastics are ubiquitous to both freshwater and marine water sources and have been documented in nearly every water source,

including the secluded waters surrounding Antarctica. The Antarctic Peninsula is home to several scientific bases and a tourist destination but even so, this region of the world is highly separated from the plastic pollution problem in the world's oceans. Global ocean currents contribute to the movement of plastic and other debris in our oceans, with three major ocean gyres running parallel to the Antarctic Circumpolar Current, the current that surrounds the continent of Antarctica, and contributes to both Antarctica's connection and separation from the world. Microplastics have been documented as far south as 67°S but, studies have yet to look at the concentration of microplastics in fjord systems along the Western Antarctic Peninsula. This project aims to quantify microplastic presence, if any, in three target fjords over a three year period from seawater samples from the surface and the benthos. Microplastics were quantified and characterized by type from three fjord systems along the Antarctic Peninsula.

**Jordan Gilliard**

**Biology**

***The Potential of Vitamin B12 in Suppressing the Inflammatory Response of the TNF $\alpha$  Pathway in Danio rerio***

**Co-Author(s): Jesse Neto, Guilherme De Lima**

Faculty Mentor(s): Scott Taylor, Biology

Lead Author Department: Biology

Session: Main Poster Session

In Inflammatory Bowel Disease, TNF $\alpha$  is the main pro-inflammatory cytokine involved in their pathophysiology, specifically in the acute phase of inflammatory reactions (main pharmacological target for Chron's disease). Even though TNF $\alpha$  is important to regulate the response of the immune system to an antigen or a cancerous cell, it is over expressed IBD patients. Also, IBD patients commonly present vitamin B12 deficiency. Vitamin B12 (water-soluble) is an essential intrinsic factor that aids in DNA and erythrocyte synthesis, and supports myelin sheaths in the nervous system. Diagnostic and management guidelines for vitamin B12 (cobalamin) deficiency in inflammatory bowel disease are lacking. It is hypothesized that vitamin B12 deficiency increase inflammation in acute phases of IBD. The objective of this research project was to investigate the possible interplay of vitamin B12 supplementation in down-regulating the gene expression of TNF- $\alpha$ . For this study, Danio rerio (zebrafish) were used as a model organism. Zebrafish were treated with vitamin B12 (Cyanocobalamin) via food and/or injection for fourteen days in order to attempt suppression in the genes involved in inflammation, specifically TNF- $\alpha$  and Nfkb1. Wounding of the caudal fin and collection of tissue 48 hours post-injury were conducted according to a previously established protocol. RT-PCR, qRT-PCR, Gel Electrophoresis, and ImageJ were employed to evaluate TNF $\alpha$  gene expression of control and vitamin B12-treated fish pre- and and post-injury. If the hypothesis proves correct, it is expected that fish treated with vitamin B12 will have reduced levels of inflammation following injury.

**Juliana Giraldo**

**Biology**

***Characterizing reef fish in the Gulf of Mexico using eDNA metabarcoding***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Environmental DNA is a powerful, new approach for assessing marine biodiversity causing minimal disturbances to marine ecosystems. With biodiversity being

threatened by anthropogenic impacts, there is a need to stimulate the use of taxonomic inventories for describing marine diversity and providing management decisions. Traditional sampling to monitor fish communities can be costly, time-intensive, and destructive to marine environments. Environmental DNA metabarcoding offers reliable tools for assessing cryptic, rare and elusive species detections over short periods of time. In this project, we will evaluate the ability of using eDNA metabarcoding to evaluate reef fish communities in the Gulf of Mexico, and their distributions. Metabarcoding uses MiFish universal primers targeting the 12S rRNA gene that describes fish biodiversity. Water samples will be collected on a NOAA Reef Fish Video (SRFV) survey cruise aboard the Pisces in April and May of 2020. Molecular tools will be applied at Janosik Lab, and samples will be sequenced using Illumina Highseq. Analysis will be based on haplotype diversity, phylogenetic and diversity analysis. Thus, richness may be calculated by measuring fish diversity from each site. To our knowledge the eDNA evidence presented in this study will be the first use of this technique for reef fish identification in the Gulf of Mexico. We will also compare eDNA metabarcoding results with conventional data.

**John Gunther**

**Biology**

### **Bacteriophage: From Isolation to Sequencing**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

This poster will present the process and results of a Performance Improvement project. The researcher will describe the process and results of a summative evaluation. In 2018, a small charitable organization created a new programmatic effort to address the employment gap for neurologically divergent job seekers. The program initially developed services focused on increasing employment outcomes. By delivering direct skills instruction, participating individuals could enhance their chances for finding competitive pay employment. Key stakeholders felt the program did not differentiate itself from other local agencies; therefore, the program director performed a needs analysis. After the initial analysis, the organization decided to change the targeted population. The organization redefined its mission, vision, processes and procedures. After operating for an additional year, the goals of the organization were still not being met. Following the principles of Performance Improvement, the researcher performed a comprehensive summative evaluation. The evaluation used the seven steps of "Evaluating Impact" as outlined by Ingrid Guerra-Lopez (2007) based on The Organizational Elements Model (OEM) as developed by Kaufman (2000, 2006). The steps of the performance improvement evaluation followed were: 1- Identifying Stakeholders and Expectations; 2- Determining Key Decisions and Objectives; 3- Deriving Measurable Indicators; 4- Identifying Data Sources; 5- Selecting Data Collection Instruments; 6- Selecting Data Analysis Tools; 7- Communicating Results and Recommendations; The researcher will present the findings in a data-driven framework outlining the recommended solutions to move the organization forward to meet the needs of the identified stakeholders and the community.

**Melissa Hebert**

**Biology**

### **Characterizing elasmobranchs in the Pensacola Bay System using environmental DNA metabarcoding**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Estuaries are often used as foraging habitats and nursery grounds by many elasmobranch species because estuaries provide protection, as well as an abundance of nutrients and available prey. However, essential habitats for many elasmobranchs, such as breeding and foraging grounds, have not been identified due to their frequent migrations of elasmobranchs into estuaries and coastal waters. Constant fluctuations of abiotic factors in estuaries make it increasingly important to understand how elasmobranchs impact their habitat in response to these changes. Elasmobranchs are highly mobile, making traditional survey methods, such as longlines and gill nets, difficult to obtain accurate results; thus, the resolution lies with using molecular tools such as environmental DNA (eDNA) metabarcoding. Environmental DNA is an organismal trace of DNA molecules in the environment in the form of tissue or excreted cells, which can be extracted from an environmental sample without direct capture of the target organism. Environmental DNA metabarcoding refers to the identification of multiple species from a single environmental sample using a generalist molecular marker. This molecular tool has shown to represent the biodiversity present in a collected sample and has been more efficient than traditional in situ sampling. The objective of this study is to use eDNA metabarcoding to characterize elasmobranch usage in the Pensacola Bay System. It is hypothesized that a majority of the species found will be in Pensacola Bay, close to river mouths during late Spring through early Summer.

**Kelsey Hope**

**Biology**

### **Enumerating New Photoheterotrophy Genes in Polar Regions**

**Co-Author(s): Gabriela Castaing, Logan Severson, Ari Simmering, Leila Harris**

Faculty Mentor(s): Lisa Waidner, Biology

Lead Author Department: Biology

Session: Main Poster Session

Photoheterotrophy is defined as the ability to harvest light energy to supplement heterotrophic energy needs. Photoheterotrophic bacteria's genomes encode specialized proteins like rhodopsins to allow the bacteria to use light energy while also performing heterotrophy. Proteorhodopsin (PR) is a transmembrane protein that acts as a light-driven proton pump which enhances ATP production in bacteria that otherwise rely on oxidation of organic material for energy. Heliorhodopsin (HR) is another transmembrane protein that appears to have a similar, if not identical, function to proteorhodopsin, despite presenting a different structural positioning within the cell membrane. Polar DNA samples (from Antarctica in April 2019 and November 2019) will be examined for the presence of both HR and PR. Designing new qPCR primers specific to polar PR and HR genes is essential for characterization of Antarctic bacteria containing these specialized proton pumps. We cloned PR genes to determine sequences of PR genes present only in polar samples and compared those sequences to known tropical and subtropical PR genes. Further comparisons of the HR/PR gene sequences to current DNA databases may promote the discovery of genes similar to HR/PR that have not yet been noted as such. Abundance and sequence analyses are currently underway.

**Caroline Hornfeck**

**Biology**

***Environmental DNA Metabarcoding of Elasmobranchs from Fishing Piers at Pensacola Beach***

**Co-Author(s): Melissa Hebert**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Elasmobranchs (sharks, skates, and rays) serve important ecological roles within ecosystem communities due to their influence over lower level organisms. Over the years, many elasmobranchs have experienced a decline in population size due to anthropogenic activity. The Florida Fish and Wildlife Conservation Commission released new elasmobranch fishing regulations that went into effect on July 1, 2019. Proper handling of prohibited species remains vague and locations of these species at Pensacola Beach are unknown. Due to their size and high mobility, monitoring the distribution and abundance of mobile elasmobranchs in marine ecosystems remains challenging. Traditional survey methods, such as longlines, can be harmful and invasive. The aim of this study is to characterize elasmobranch presence and diversity at Pensacola Beach using cost-effective and non-invasive environmental DNA (eDNA) metabarcoding techniques. Environmental DNA is the trace amount of DNA molecules in a marine environment that have been left behind from an organism, usually in the form of metabolic waste. Metabarcoding can be used in identifying several taxa from an environmental sample. In this study water samples will be collected at three sites from May to August; abiotic factors such as temperature, salinity, pH, and dissolved oxygen will be measured. DNA will be extracted from preserved samples and amplified using the MiFish universal PCR primers. Detected elasmobranch species will be grouped based on the season, and endangered species will be further investigated. This study will help our understanding of elasmobranch diversity at Pensacola Beach and to help improve fishing regulations on these keystone species.

**Ashlie Johnson**

**Biology**

***High Impacts of Lab Research***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: High Impact Practice (HIP) Showcase

**Baillie Jones**

**Biology**

***Spotty Science: Bacteriophage Spookyspider***

**Co-Author(s): Sydney Truax**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

Of all the organisms on the planet, bacteriophages exist in the highest quantity. Bacteriophages live on your skin, water, and in the air. The discovery of bacteriophages has greatly impacted the biomedical field. The aim of this research is to discover a bacteriophage that has never been discovered before. The process included isolating bacteriophages from a soil sample, purifying the sample, and amplifying the bacteriophages within the sample. The phage sample reproduced very slowly throughout the research. The titer was  $3.3 \times 10^4$

pfu/mL, and the phages were medium sized with clear plaques with turbid edges. Since the bacteriophage concentration was so low, it was not high enough to send off for DNA sequencing. This was most likely due to slow phage growth because of unfavorable growth conditions. Using a different bacterial host and identifying the ideal environment for the phage would enable the phage to reproduce at a faster rate, thus having a concentration high enough to send off for DNA sequencing. The genome of bacteriophage EugeneKrabs was sequenced and annotated. EugeneKrabs is in the EK cluster and has 52 genes.

**Stephanie Jones**

**Biology**

***Using Phage Display Techniques to Detect Post-translation Modifications of Tau in the Pathology of Alzheimer's Disease***

**Co-Author(s): Isabel Holland**

Faculty Mentor(s): Rodney Guttman, Biology

Lead Author Department: Biology

Session: Main Poster Session

According to the National Institute on Aging, recent studies have estimated Alzheimer's Disease (AD) as the third leading cause of death in the United States. Unfortunately, there remains no treatment and no cure. As such, biomarkers for the disease are being researched for the development of procedures for earlier and more accurate diagnosis. Current research suggests that biological alterations of microtubule-associated protein tau occur in the preclinical stage of AD and was correspondingly chosen as the biomarker of interest for this study. Researchers implemented phage display techniques to investigate the protein-protein interactions in AD cerebral spinal fluid (CSF) samples of the tau protein. The aim was to isolate specific phage that were capable of detecting the presence of post-translational modifications (PTMs) of tau that are specific to the disease pathological progression. Researchers utilized Ph.D.-C7C phage display library and samples of CSF from non-AD and clinically diagnosed AD patients to perform an enzyme-linked immunosorbent assay (ELISA). The biopanning process entailed incubation of the phage library into tau-coated wells of CSF, and washing, eluting, and amplifying the bound phage. Individual clones were isolated and sequenced followed by an ELISA to quantify the extent of binding, comparing AD vs non-AD control subjects. Preliminary results suggest that the C7C library phage bind to specific tau targets with ongoing studies to validate initial candidate phage for the ability to selectively identify AD subjects based on their tau PTM profile.

**Jenna King**

**Biology**

***A Peek into the Population Genetic Structure of the Alabama Sturgeon using Environmental DNA Water Samples***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Genetics at the population level can illuminate important information about the evolutionary health and history of a population, which can be particularly important for threatened or endangered species. The Alabama sturgeon (*Scaphirhynchus suttkusi*) is the rarest and most endangered species of sturgeon in the world. The decline of this species is attributed largely to early overfishing prior to federal protection and habitat fragmentation by the installation of dams

and impoundments in the Mobile River Basin. Despite extensive catch efforts through the traditional methods of electrofishing, trot-line fishing, hoop netting, and gill netting, only six individuals have been captured since 1997. Recently, however, positive detections of the Alabama sturgeon in the Mobile River Basin have been confirmed using environmental DNA (eDNA) water samples. This research used 43 eDNA samples that tested positive for Alabama sturgeon DNA to investigate and inventory the population genetic structure. Using high throughput sequencing (metabarcoding) and bioinformatic analyses, haplotype quantity and diversity were determined. Genetic diversity of this rare and endangered species offers insight on its evolutionary health by characterizing the degree of inbreeding and genetic drift. A comparative analysis on genetic diversity by sample locality allowed for the evaluation of genetic connectivity by quantifying gene flow across river impoundments. The population genetics data gleaned from eDNA samples ultimately provides conservation managers with valuable information for future decision-making and management.

**Jordan Kleinschmidt**

**Biology**

***An Analysis of Stromita haemastroma Tissue for the Presence of Microplastics***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Microplastics are defined as small pieces of plastic that measure five millimeters or less in size and can be many shapes and colors. The source of these microplastics can be from beauty products, breakdown of larger plastic debris, and other types of microbeads and bits of plastic from manufactured goods. One prevalent danger of microplastic pollution is consumption by marine organisms, which will later be consumed by humans. The focus of this study is to quantify microplastics contamination in the Rock snail from the intertidal habitat in Northwest Florida. The Rock snail (*Stromita haemastroma*) is a gastropod mollusc that can be found commonly in the Gulf of Mexico. These snails feed on algae within the seagrass beds, keeping the algae under control and the seagrass healthy. Rock snails serve as sustenance for other organisms in the ecosystem. Potential for biomagnification up the food chain is present if Rock snails consume microplastics. Rock snails will be collected locally from intertidal beach habitats and tissue will be digested for microplastic quantification. After tissue digestion is complete, samples will be filtered and microplastics will be quantified and measured using microscopy.

**Sierra Landreth**

**Biology**

***Identification and Annotation of Phage Genes in Pensacola***

**Co-Author(s): Itzel Bonilla**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

New innovations and scientific discoveries in the medical world have led to a breakthrough in new forms of medical treatment. Despite being abundant organisms in the biosphere, our knowledge of the phage population is still insufficient. The purpose of the experiment was to gather more information on phages local to the Pensacola area and to isolate, purify and identify a separate unknown phage. Bacteriophages were collected within a soil sample

in Pensacola, Florida and underwent direct and enriched isolation to test for the presence of phage. Phages were purified using serial dilutions, picking plaques, spot titering and collecting plates lysates before being amplified with host bacterium *Microbacterium foliorum* to achieve a final titer of  $2.0 \times 10^{10}$  pfu/ml. Phage plaques averaged about 2 mm in diameter and were very clear with slightly opaque outer edges. Based on the appearance of BeanBoy, the phage looks to be a member of the Siphoviridae group. Not enough DNA was obtained and the sample was not sent to a laboratory for genome sequencing. EugeneKrebs was sent instead, and a full genome sequence for this phage's DNA was created. The second part of the research was to use bioinformatics to annotate Eugene Krab's genome. Bioinformatics was utilized by comparing Eugene Krab's unannotated genome to those of already annotated phages in the same class. A completed annotation for Eugene Krab's DNA genome was put together in collaboration with the research class. It was categorized in the cluster EK with a genome length of 54754 bp.

**Nathan Law**

**Biology**

***Sex Differences in the FVEP-P2 Latency: An Effort Towards Reducing Inter-Individual Variability***

**Co-Author(s): Erin Sullivan, Kayley Hepworth, Sharon Massie**

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Biology

Session: Main Poster Session

Alzheimer's Dementia (AD) is the most common form of dementia in the world, currently affecting an estimated 24 million people worldwide. The disease is characterized by memory loss and a progressive decline in cognitive abilities (Mayeux & Stern, 2012). Due to the loss of cholinergic neurons early in the disease course, researchers are examining the clinical utility of the flash visual evoked potential-P2 (FVEP-P2), which is an electrophysiological measure of cholinergic functioning. Thus far, clinical utility of the FVEP-P2 is limited due to unacceptably high variability in the component's latency. However, previous research suggests the existence of neurophysiological differences between males and females that may naturally reduce the variability of the FVEP-P2 latency. For example, hormonal differences between males and females may reduce the variability of the P2 in women, but not in men. This study involves a post-hoc analysis of data obtained from two previous investigations that involved the measurement of the FVEP-P2 component. The data sets were combined and separated by sex (i.e., male and female). Measures of intraindividual and interindividual variability were then calculated. Preliminary findings suggest that females exhibit less variability than males, that normative data should be sex-specific, and that the FVEP-P2 might be more clinically relevant in women than in men.

**Daniel LeMay**

**Biology**

***A Novel Synthesis of Cu (I) Phenylacetylides***

**Co-Author(s): Wheeler Smith**

Faculty Mentor(s): A. Timothy Royappa, Chemistry

Lead Author Department: Biology

Session: Main Poster Session

The family of compounds known as the copper(I) phenylacetylides, Cu-C≡C-Ar (where Ar stands for the phenyl moiety), is important in a variety of areas such



as medicinal chemistry, pharmaceutical manufacturing, drug development, and general chemical synthesis. Our laboratory has discovered a novel, cheap, simple, rapid, and high-yielding route to these compounds. We have successfully applied our method to synthesize a series of copper(I) phenylacetylides as well as copper (I) acetylides. Our current focus lies in optimizing the purity of our products via elemental analysis.

### **Joel Lukens**

#### ***Heavy Metal Determination of Oyster Tissue Using ICP-OES***

**Co-Author(s):** Noah Thrift, Rebecca Boutwell

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Biology

Session: Main Poster Session

Bioaccumulation of heavy metals in marine environments is a serious threat to organisms, as well as consumers further up the food chain. This study will examine the lower ranking of the food chain focusing on filter feeding mollusks in the Escambia Bay and surrounding areas. The benefit to using bivalves, is their susceptibility to environmental change as well as their sessile nature enabling a collection of data from static locations. Metals enter the food chain with filter feeding organisms, such as mollusks, making them great biological indicators of toxic metal presence. Due to the high stability of metals, they build up in the soft tissues of organisms and proceed further up the food chain. With the use of specialized instrumentation, ICP-OES (inductively coupled plasma optical emission spectroscopy), we will analyze microwave digested samples from several marine Mollusca to identify potential environmental threats. ICP-OES utilizes plasma to increase the energy levels of the metals in our sample solution and the specific wavelengths released correspond to a specific metal species, the specific light characteristics are used to accurately determine metal concentrations. This project could yield valuable insight into metal presence in local marine ecosystems.

### **Jamie Martinez**

#### ***Development of an E-Portfolio***

Lead Author Department: Biology

Session: High Impact Practice (HIP) Showcase

### **Logan Mastrandrea**

#### ***The Discovery and Annotation of Bacteriophage Bennet***

**Co-Author(s):** Melayne Montero

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

Bacteriophages are viruses that target and use bacteria as host to reproduce, eventually killing them. These viruses possess great benefits for humans because they can be used to treat severe bacterial infections, as well as for other purposes that are still unknown. In this research, we aimed to discover new strains of phages in environmental samples in order to annotate their genes and include it in the worldwide phage database for further research. The phage Bennet was found and grown using the host bacteria *Microbacterium foliorum*. Bennet's plaques were turbid that on average measured 1.5 mm. Bennet's

### **Biology**

morphology resembles that of the styloviridae family consisting of a medium sized "head" and a long thin tail. Using methods such as DNA extraction and gel electrophoresis the DNA was isolated and extracted obtaining a concentration of 24.5 ng/Ql with a titer of  $7 \times 10^9$  pfus/ml. From all the phages found collectively as a group, it was only possible to send one phage DNA to get sequenced while the rest were DOGEMS sequenced. A DNA pool was created using all the DNA samples and that was used to match the pieces of the sequence that belonged to Bennet. We used the readings from several programs such as DnaMaster, Blast, etc. to annotate the genes that were determined to belong to Bennet, to figure out the possible proteins and their predicted function. Based on these findings we have concluded that the bacteriophage Bennet belongs to the E cluster.

### **Camila Medina**

#### ***Effectiveness of Dance to Improve Mood in Older Adults with Dementia: A Review of Evidence***

Faculty Mentor(s): Crystal Bennett, School of Nursing

Lead Author Department: Biology

Session: Main Poster Session

It is estimated that as of 2019, 5.6 million Americans age 65 or older are currently living with Alzheimer's Dementia (Alzheimer's Association, 2019). Neuropsychiatric symptoms such as agitation are challenging to manage and lead to greater dependence on caregivers resulting in increased caregiver burden. An examination of the current literature is needed to assess the effectiveness of dance therapy to reduce agitation and improve mood. Methods: Evidence was searched for in the following publication databases: CINAHL, PubMed, Nursing & Allied Health Source (ProQuest), and ScienceDirect. In addition, bibliographies were manually searched from literature in Dissertation and Thesis (ProQuest) for relevant articles. Keywords used included Alzheimer disease, dementia, dance therapy, delirium, behavior, psychomotor agitation, and mood. The Mixed Methods Appraisal Tool (MMAT) was used to assess the quality of relevant articles. Studies included were required to have dance therapy, adapted dance, dance exercise, modified dance, or recreational dance as the primary intervention. The population in each study must focus on persons with Alzheimer Disease or Alzheimer's Disease and related dementia (ADRD). Due to the limited publications in this area, all publication dates and local as well as international studies were included. The research yielded 9 relevant articles that met inclusion criteria. Findings: The nine articles included cohort, quasi-experimental, randomized control trial, and a qualitative study. Three studies found dance therapy reduced agitation. Two of

### **Biology**

### **Biology**

### **Biology**

### **Relashia Nicholson**

#### ***The Expression of MMP9 in Zebrafish***

**Co-Author(s):** Lacey Radloff, Caitlyn Harrigill

Faculty Mentor(s): Scott Taylor, Biology

Lead Author Department: Biology

Session: Main Poster Session

This experiment was conducted to determine the effects of grape seed extract on the inflammatory gene "MMP9" from the zebrafish and (comparatively) the pinfish genome. The hypothesis for this experiment is that grape seed extract will suppress the expression of the MMP9 gene in zebrafish. In order to test

### **Biology**

this hypothesis a variety of methods were used to obtain and analyze results. The first step in this process was to design primers to amplify a 200-300 and a roughly 1000 bp region that could be used for PCR sequencing in zebrafish and pinfish DNA. The purpose of these primers was to amplify the portion of the gene from zebrafish using the zebrafish genome as a template to amplify MMP9 expression. A minor injury was performed on the tail fin of each fish at time points recorded prior to the collection of tissue. Collection occurred at determined times following the injury. The time intervals were: 24- or 48- hours post injury. There was also a control group with no injury. Using tissue from the injury site RNA was purified. The RNA collected was used to create cDNA. Which was then used to complete a PCR. An agarose gel was then used to determine the gene's expression each time point. The DNA from the gel was purified to complete a second PCR with grape seed extract present. This is an ongoing study and is therefore awaiting results before full conclusions can be drawn regarding rejection or acceptance of the hypothesis stated.

**Julianna O'Bar**

**Biology**

***Trends in Phytoplankton Biomass across the Pensacola and Perdido Bay Watersheds***

Faculty Mentor(s): Jane Caffrey, Biology

Lead Author Department: Biology

Session: Main Poster Session

The Bream Fisherman Association (BFA), has been monitoring water quality in the Pensacola and Perdido Bay systems since the 1970s. In recent years, BFA has partnered with the Florida Department of Environmental Protection to conduct water quality monitoring across the region using quarterly analysis of grab samples. However, chlorophyll a was not included in their analyses. To remedy this, the University of West Florida and the BFA have been working together to examine chlorophyll a at sampling locations. Chlorophyll a is used to measure phytoplankton biomass in aquatic environments and can be a good indicator of eutrophication. In the field, 60 mL grab samples were filtered through a glass microfiber filter, which was stored frozen until analysis. Samples were analyzed using a fluorometer following a 24-hour extraction with 90% acetone. Results showed generally low concentrations of chlorophyll a in the Blackwater and Escambia River systems, with most values not exceeding 6 ug/L. Extremely high concentrations were found in the urban bayous compared to the Blackwater and Escambia River systems, with particularly high values in March 2018 in Bayou Texar. However, the urban bayous also had the greatest degree of variability.

**Dhanvi Patel**

**Biology**

***Early Detection of Alzheimer's Disease via Phage-Based Biomarkers***

**Co-Author(s): Peyton Sims**

Faculty Mentor(s): Rodney Guttmann, Biology

Lead Author Department: Biology

Session: Main Poster Session

Being a leading cause of death in the United States, Alzheimer's Disease (AD) is most common in the elderly and is typically characterized by a noticeable decline in cognitive function. It is generally accepted that clinical diagnosis damage to the brain is typically irreversible. Therefore, developing the means to diagnose subjects as early as possible is desired. To address this, researchers have been

evaluating biofluids (e.g. blood, cerebrospinal fluid) for evidence of biochemical changes associated with AD development or progression. Our lab has focused on post-translational modifications (PTMs) in the tau protein because tau is the major component of a major neuropathological finding in AD, the neurofibrillary tangles. In addition, PTMs may be responsible for the development of putative toxic functions of tau that may contribute to neuronal loss in the hippocampus. Using biomarkers such as PTM changes of tau as a diagnostic tool allows for an inexpensive diagnostic intervention capable of detecting AD prior to the onset of typical symptoms. In the current research the PHD 7mer library (a random 7-mer peptide display library) was used to study cerebral spinal fluid in AD and control subjects. In using this phage library, comparisons were drawn between the binding patterns seen in the experimental and control groups to determine if phage-based biomarkers present an effective method of identifying biological changes in the AD-afflicted brain. Current findings support the use of this approach and studies are ongoing to validate candidate phage in a large cohort of clinically diagnosed subjects.

**William Philips**

**Biology**

***Analyzing the Impact of Turmeric on the Expression of the TNFsf10 Gene in Zebrafish***

**Co-Author(s): Matthew Blum, Elivet Rodriguez, Kealy Farrar**

Faculty Mentor(s): Scott Taylor, Biology

Lead Author Department: Biology

Session: Main Poster Session

The TNFsf10I-201 is a member of the tumor necrosis factor ligand family (TNF). In humans, TNFsf10 functions by selectively causing apoptosis of tumor cells while being harmless to normally functioning cells (NCBI, 2020). The goal of this experiment is to examine the effect of turmeric/curcumin on the TNFsf10I-201 inflammation gene in zebrafish. The anti-inflammatory effects of turmeric will be measured by TNFsf10 mRNA activity at the site of inflammation in zebrafish. Additionally, the TNFsf10 gene will be sequenced in zebrafish. TNFsf10 was going to be sequenced in the incomplete genome of pinfish, however the primers designed for this experiment failed in the process of gathering the genomic DNA from pinfish, so the gene will be sequenced in zebrafish.

**Trupti Potdukhe**

**Biology**

***The Abundance of Vibrio vulnificus and Vibrio parahaemolyticus in Water and Sediment Samples within the Pensacola Bay System***

**Co-Author(s): Carrie Daniel, Michael Swords, Gina Rodriguez, Lacey Bowman, Mackenzie Rothfus, Wade Jeffrey, Jane Caffrey, Barbara Albrecht**

Faculty Mentor(s): Lisa Waidner, Biology

Lead Author Department: Biology

Session: Main Poster Session

Certain species of Vibrio are pathogenic, sometimes commonly called "flesh-eating bacteria," and are of great concern to the public. Although all species of Vibrio are naturally-occurring, Vibrio parahaemolyticus and V. vulnificus have been of concern to Northwest Florida citizens but have not yet been enumerated in local waterways. The abundance of Vibrio species has been shown to be associated with fine particle attachment, in oyster shells, and even in seal enteric pathways. To better assess the threat levels in the Pensacola Bay System

and other nearby bodies of water, we recently enumerated these bacteria in water, sediments and on invertebrate shells. We sampled 44 stations within the Pensacola Bay System, and later collected, diluted, and plated sediment and water samples. If oyster shells or invertebrates were present, biofilm samples from these sites were also collected, diluted, and plated. Samples were plated on CHROMagar, a chromogenic agar that indicates individual colonies of *V. vulnificus* and *V. parahaemolyticus*. Sediment samples showed the greatest abundance of *V. vulnificus* and *V. parahaemolyticus* in general. Additional analyses are underway, and a second round of sampling will be done in the summer of 2020. Conclusions may suggest that *Vibrio* species serve as a bio-indicator for ecosystem and public health risks.

**Peyton Prieur**

***ChunkyCheese DNA Discovery and Analysis***

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

A phage is a virus that infects bacteria and reproduces inside of it. Soil is studied in hopes of finding a phage and understanding which cluster it comes from along with how it relates to other phages and what makes it different. This is important because the function of most phages is unknown and can help with medicinal research on top of bacteria evolution. Research Method – Phages were extracted from a soil sample then plaque assays were assembled to find phages to test and were incubated. After the enrichment culture sat for 7 days, spot tests began. After many sets of serial dilutions and flooded titers, DNA was extracted from the phage. Enzyme digests were run for three hours. The plaque consisted of a cloudy ring around a clear center. Six different sets of DNA from phages in our class were pooled for DOGEMS analysis. Results- The phage ChunkyCheese was digested completely with the enzyme and came out with the clearest enzyme digest. The phage was then pooled with a group of other phages and is currently in the process of being annotated to discover which phage belongs to which cluster with the information that we were provided. The titer was  $5.06 \text{ pfu}/2.6 \times 10^6 \text{ mL}$  with a morphology of Siphoviridae. Conclusion- ChunkyCheese has been placed in cluster E. Research has not yet concluded whether or not it belongs to EEs or EA5. The phage research can help evaluate how different types of viruses react with the

**Gianni Ramirez Batista**

***The Impact of Roman Theatre***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Biology

Session: Main Poster Session

The Greeks taught many things to the Romans, including theatre. The Romans' leisure time through the acquisition of slaves allowed for theatre's growth as a popular form of entertainment. Festivals in 240 B.C. in dedication to Jupiter were the beginning of Roman theatre. Rewritten Greek comedies are referred to as fabula togata. The plays that were unchanged were called fabula palliata. Various playwrights wrote significant works between the time periods of Plautus and Seneca, distinguishing theatre as a valid form of entertainment. These works were popular among the people because they focused on the mundane lifestyle

**Biology**

of everyday Romans. The action was important because most of the people who attended these plays were common people, including women and slaves. Plautus wrote mainly comedies with around 130 works having survived, only twenty are certainly known to be his. Plautus added a lot to Roman comedy in keeping his plays energetic and lively, he contributed to the audience enjoying their experience. People knew Plautus for his crude humor and strong diction during his plays. Many playwrights during the period of the English Renaissance drew from his various Roman dramas and comedies. Plautus influenced renaissance playwrights through his use of divine intervention, the emphasis of character traits, his crass deliverance of an overall message, and his infamous use of humor.

**Jackson Reimer**

***Continuation of Time Series Database for Pensacola Beach Microbial Ecology***

**Co-Author(s): Gina Rodriguez, Ryan Gustin, Caroline Hornfeck, Lauren**

**Hamilton, Ari Simmering**

Faculty Mentor(s): Wade Jeffrey, Biology

Lead Author Department: Biology

Session: Main Poster Session

Although microorganisms are small in size, they occupy and influence a wide breadth of ecosystems in terrestrial, marine, and aquatic environments. Therefore, understanding and evaluating microbial community dynamics is important for understanding any given environment. After a baseline for microbial parameters is established in any given environment, studies of the microbial ecology can be used as an indicator of current environmental health or to observe anthropogenic effects by humans on the environment. This study involves biweekly sampling at the end of Pensacola Beach pier which is now in its fifth year of study. At the sample site, water samples are collected, and temperature and salinity are measured using a CTD. The water samples collected are used for various analyses including bacterial production, primary production, nutrients, bacterial direct counts, and chlorophyll a to provide an encompassing study of the parameters that commonly influence marine microbial diversity. Now in the fifth-year, trends regarding the seasonality and year to year fluctuation of variables are becoming increasingly more apparent. High variability in production and seasonal trends of water temperature are some of the most evident immediate results from the study; however, further knowledge of the diversity of microbial ecology of the northern Gulf of Mexico should become more apparent as the study continues into the future.

**Hunter Rider**

***Detection of Rare Aquatic Species: using Environmental DNA to locate Populations of the Alabama sturgeon***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Environmental DNA (eDNA) is a recently developed tool being used to detect imperiled and/or declining and spatially variable organisms. Field sampling for aquatic species is a costly and extensive process that is not always dependable in ascertaining the presence or absence of an endangered target species. Environmental DNA is used in this project to detect the Alabama Sturgeon

**Biology**

**Biology**

(*Scaphirhynchus suttkusi*) presence throughout the Tombigbee and Alabama rivers using left behind DNA of the target species, such as fecal matter, mucus, or scales. The Alabama sturgeon is an ideal representation for the eDNA technique in detecting endangered species because this is the most endangered species of sturgeon in the world. The technique of conventional riverine sampling is very costly and ineffective in the detection of this species and can cause stress to aquatic species and their habitats. Water samples were collected at specific sites in the rivers and preserved in ethanol and sodium acetate for DNA extraction. Results from the eDNA in this study will reveal temporal information of the presence of the Alabama Sturgeon if any DNA has been left behind by that organism. If the detections are efficient then vital information of the habitats for management purposes as well as specific locations for field sampling can be determined. The Alabama Sturgeon population can be benefited by the removal of at least one passage barrier in these rivers if there are positive detections of the species.

**Emily Robbs**

**Biology**

***Exploring the Effects of Atypical Antipsychotics on Neutrophil Viability***

Faculty Mentor(s): Peter Cavnar, Biology

Lead Author Department: Biology

Session: Main Poster Session

Neutropenia is a syndrome where an individual's absolute neutrophil count (ANC) drops to low levels, impairing immune function and response and ultimately leading to an increased risk of infection. This syndrome can be induced by a class of drugs known as atypical antipsychotics (AAPs), which are used to treat mental disorders like schizophrenia and bipolar disorder. How these drugs act on neutrophils remains unknown. Our study aims to determine if four of these AAPs—clozapine, olanzapine, aripiprazole and quetiapine—decrease cell viability in neutrophils using a model neutrophil cell line, PLB-985. Results indicate that aripiprazole significantly reduces neutrophil viability at 20 $\mu$ M and 50 $\mu$ M concentrations after cells have been exposed to the drug for 48 hours.

**Elivet Rodriguez**

**Biology**

***Synthesizing Derivatives of Novel Heterocyclic Compounds for Antimicrobial Testing***

**Co-Author(s): Mia Vertudez, Brett Ramirez, Connor Catalani**

Faculty Mentor(s): Prerna Masih, Biology

Lead Author Department: Biology

Session: Main Poster Session

Heterocyclic compounds, specifically benzo[b]thiophenes, have been found to have various biological activities (Algo et. al. 2018, Keri et. al., 2017). Heterocyclic compounds are bountiful in nature, which makes them important for research in medicinal chemistry due to their pharmacological activities. In our previous studies, over 50 novel heterocyclic compounds were tested for their antimicrobial activity. Through microdilution assays, two compounds with similar structures were found effective against Gram-positive bacteria, including *Staphylococcus aureus*, *Enterococcus faecalis*, and *Bacillus cereus* and pathogenic yeast, *Candida albicans*. Both compounds had benzo[b]thiophenes with a halogen and cyclohexanol attached. The chlorine containing compound worked better at lower concentrations than the bromine containing compound.

The structure-activity relationship of these compounds were further explored by modifying the presence or absence of alcohol groups, hexane vs. hexene groups, and cyclohexanol vs. cyclopentanol groups. The aim of the modifications was to increase their antimicrobial activity; however, these new structures were not found to work better. Future experiments will be focused on defining the characteristics of the two most effective compounds, determining the mode of action against bacterial and fungal cells, and testing their cytotoxicity. This will include determining if the compounds are bacteriostatic or bactericidal agents.

**Gina Rodriguez**

**Biology**

***Determining the Variability in Seasonal Abundance of *Vibrio* spp. in the Coastal Waters of Pensacola Beach***

**Co-Author(s): Jackson Reimer, Lisa Waidner**

Faculty Mentor(s): Wade Jeffrey, Biology

Lead Author Department: Biology

Session: Main Poster Session

*Vibrio vulnificus* is a bacterium known to cause necrotizing fasciitis and gangrene in open wounds, as well as vibriosis- an illness for which the Center for Disease Control holds responsible for nearly 80,000 illnesses and 100 deaths annually in the United States. Of those aforementioned cases, 25 instances occurred along the Gulf Coast. Due to claims of *Vibrio* at Pensacola Beach, this study measured *Vibrio* levels in two locations: Quietwater Beach and Pensacola Beach Pier. Water samples were collected biweekly and streaked onto chromogenic agar plates to isolate and therefore identify *Vibrio* species: *V. parahaemolyticus*, *V. vulnificus* and *V. cholerae* where *V. parahaemolyticus* produces mauve-purple colonies and *V. vulnificus* produces green-blue colonies. Temperature and salinity were measured at Pensacola Pier, a coastal location which was compared to Quietwater Beach, an inshore site. This research was intended to provide a better understanding of seasonal *Vibrio* trends in two of the most popular areas of Pensacola Beach, often hosts to thousands of visitors annually, for both scientific and public health interests.

**Mackenzie Rothfus**

**Biology**

***Engaging High School and University Students in Monitoring Water Quality to Improve Waterway Conditions***

**Co-Author(s): Charlene Mauro, Anne Laurenzi**

Faculty Mentor(s): Jane Caffrey, Biology

Lead Author Department: Biology

Session: Main Poster Session

The Bay Watershed Education and Training (B-WET) program has solidified an important partnership between the Navarre Beach Marine Science Station and the University of West Florida. The B-WET program started in September 2019 allowing high school students to take part in the project called "Empowering Students to Take Action: Aquatic Care Team (ACT)". The ACT project gives high school students the opportunity to observe, measure, and collect water quality data from six different locations within close proximity to the station. UWF assists in collecting the samples and running analyses including total suspended solids, chlorophyll a, ammonium, nitrate, nitrite, and dissolved inorganic phosphate. High school students will visit UWF where they can gain a full hands-on learning experience. The ACT project not only engages students through field and lab



experience, it also emphasizes the importance of educating the public on water quality throughout Santa Rosa Sound. Santa Rosa County has been concerned with water quality in regard to overall waterway conditions. Samples that have been collected and analyzed through the ACT project shows how the six locations may vary in nutrient concentration. Nutrients are generally quite low in Santa Rosa Sound. However, concentrations in William's Creek are often high, as much as ten times greater than in the Sound, suggesting creeks receiving stormwater, septic, and other non-point source runoff may be significant inputs to the watershed. The ACT project and UWF are able to communicate issues and possible solutions to support preservation of the marine environment.

**Aleigh Rowe**

**Biology**

***An Assessment of Microplastic Presence and Knowledge in the Pensacola Metropolitan Area***

**Co-Author(s): Linda Ivey, Kwame Owusu-Daaku**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

As microplastics (plastic debris less than 5mm) become a more prevalent topic in the scientific community, we aimed to assess awareness of and concern about microplastics to the general public. To help prevent aquatic ecosystems and our own diets from being flooded with microplastics, we explored these microscopic pieces of increasingly massive proportions at the source. For this study, we analyzed the prevalence of microplastics in marine organisms from local/regional markets along the Gulf Coast. Microplastic concentrations were obtained from digesting, filtering, and microscopically examined samples. Additionally, we surveyed local seafood consumers to obtain knowledge on the public's basic awareness of microplastics and their potential contamination in seafood. All these actions are in an effort to increase communal resilience to pollution by promoting the education of our local plastic problem and relaying the efforts and data behind this research to relevant stakeholders in a clear and understandable way.

**Kristina Samborski**

**Biology**

***Diving into the Fluid Dynamics of Shark Species: A Computational Approach***

**Co-Author(s): Duncan Irschick, Joseph Piacenza, Nathan Robinson, Cheng Zhang**

Faculty Mentor(s): Susan Piacenza, Biology

Lead Author Department: Biology

Session: Main Poster Session

Sharks are fast-swimming predators that can migrate vast distances through the ocean and sprint short distances to capture prey. However, little is known about species-specific differences in shark hydrodynamics. Species-specific differences in hydrodynamics may ultimately influence shark evolutionary fitness, ability to capture prey, and cause varying effects of drag that ultimately would influence bioenergetics. An increased understanding of shark fluid dynamics may increase our knowledge of how morphology influences movement dynamics in these species. Furthermore, most studies of shark movement and behavior rely on bio-loggers, e.g. satellite tags or animal-borne cameras, but it is not well understood how these devices increase drag and induce behavioral shifts.

We are using computational fluid dynamics modelling (CFDM) to quantify and investigate shark hydrodynamics. We are using existing 3-dimensional models, freely available from DigitalLife3D, of three species: a Caribbean reef shark (*Carcharhinus perezi*), shortfin Mako (*Isurus oxyrinchus*), and Blacktip shark (*Carcharhinus limbatus*). We are using the software program ANSYS Fluent to quantify drag and lift under varying swimming speeds for each species. This data will contribute to the investigation of how form affects function in these elasmobranchs by evaluating how differing morphologies affect the hydrodynamics of each species. Once we have successfully run base models on each of the shark species, we will further investigate additional drag induced from bearing data-loggers (e.g., satellite tags or animal-borne cameras). These results will be used to guide improved design of data-loggers to reduce drag and minimize behavioral bias.

**Efstathios Sneider**

**Biology**

***The Isolation and Annotation of Sappho, the Pickiest Phage***

**Co-Author(s): Chloe Huntly**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

Bacteriophage are highly specialized viruses that only attack specific bacteria to use as hosts to reproduce. Bacteriophage are being used as an alternative to antibiotics as a defense against harmful bacteria. By studying and characterizing these phages scientists can better understand their uses and their roles in the environment. Adding more phage genome annotations to the Actinobacteriophage Database allows access to an organized database of phage information. The phage Sappho originated from a soil sample found in Navarre, Florida and was isolated using direct isolation. Through a process of dilutions, isolations of the phage and collections of DNA samples took place in order for characterization using NspI restriction enzyme and electrophoresis. Sappho was included in the DOGEMS sample and was isolated using a pcr. The phage morphology shown in the plaques were very small and clear with no rings or bullseyes. Results showed no cut segments of the DNA. The final titer was 23.5 ng/ul. Annotation of the phage's genome revealed it to be in cluster E\_.

**Savannah Snider**

**Biology**

***Developing Tau-Based Biomarkers for Early Detection of Alzheimer's Disease***

**Co-Author(s): Delaney Borrelli**

Faculty Mentor(s): Rodney Guttman, Biology

Lead Author Department: Biology

Session: Main Poster Session

Alzheimer's disease (AD) is a progressive neurodegenerative disease that is always fatal. AD is pathologically defined by the presence of amyloid plaques composed of the Ab peptide, and neurofibrillary tangles composed primarily of the microtubule-associated protein tau. There are no current treatments or cure for AD and no new therapies have been approved in 20 years. During this time, all clinical trials have failed. One hypothesis for these failures is that tangles/plagues are already formed in the patient, and the treatment is started after this formation. Thus, a major objective is to identify people earlier in the disease progression so that experimental drugs can be tested earlier (during the

preclinical stages). The purpose of the current research is to identify a biomarker from human cerebral spinal fluid that would be used for early detection of AD. To attain this goal, we have used phage-peptide display to screen for the presence of abnormal forms of tau protein. Because tau is so closely linked to AD progression, we hypothesize that post-translational changes to tau are occurring through the course of the disease. ELISA screening is ongoing to determine the specificity and sensitivity of candidate phage using the above approach.

### **Emen Sukhera**

#### ***A Hydrolytic Metalloenzyme Mimic***

##### **Co-Author(s): Megan Gulsby**

Faculty Mentor(s): Ajay Lajmi, Chemistry

Lead Author Department: Biology

Session: Main Poster Session

A dinuclear macrocyclic amine ligand with a proximal cyclodextrin ring was synthesized for demonstrating cooperative hydrolysis of an activated ester mimicking the active site of carboxypeptidase A. The macrocyclic polyamine presented a tetrahedral coordination site for the catalytic Zn(II) ions whereas a proximal  $\beta$ -cyclodextrin moiety afforded binding site for alkaline earth metal ions. This presentation will focus on the synthesis of the enzyme mimic as well as its effectiveness to catalyze the hydrolysis of an activated ester at the pH corresponding to the pKa of the Zn(II) bound water that upon deprotonation serves as a nucleophile during the hydrolysis. Rate enhancement for the hydrolysis of p-nitrophenyl phosphate (PNPA) with the Zn(II) complex in presence of Ba(II) ion bound to  $\beta$ -cyclodextrin over that of the complex in its absence is presented. The effect of substrate concentration on the catalytic reaction will be examined to determine the catalytic turnover number.

**Biology**

### **Wendy Teuchtlar**

#### ***Permeability and Cytotoxicity of Fluorescent Azaborine Compounds in HeLa Cells***

Faculty Mentor(s): Peter Cavnar, Biology

Lead Author Department: Biology

Session: Main Poster Session

Azaborine compounds are fluorescent organic compounds that can potentially be used as sensors and fluorophores in bioimaging. These compounds can be beneficial in organic optoelectrical materials because of their aromatic nature. Heteroaromatic polycyclic compounds, such as these azaborine compounds, possess strong visible absorption and sharp fluorescence. This fluorescence is what makes these compounds useful in bioimaging. The University of West Florida Chemistry Department synthesized four azaborine compounds solubilized in methanol. The membrane permeability and possible cytotoxicity of these compounds in HeLa cervical cancer cells were investigated. A JC-1 assay was used to measure mitochondria membrane potential by observing cells under a fluorescent scope. Cytotoxicity was measured with a red fluorescence, that when decreased, indicates a loss of oxidative phosphorylation and potential cytotoxicity.

**Biology**

### **Kaitlyn Thompson**

#### ***Gifts of the Sea: Romans' Use of Marine Resources***

Faculty Mentor(s): Jane Caffrey, Biology

Lead Author Department: Biology

Session: Main Poster Session

Garum was a highly prized and important item in Roman culture. It was so important that fish processing factors were built all over the Roman empire including today's Spain. Garum also has been introduced in many historical written records all along the Mediterranean and surrounding areas. Archaeologists and other historical scientists have found garum dating back to 79 AD in Pompeii. This project explored how Romans made Garum or 'fish sauce' and whether this led to over fishing of particular fish species in the Mediterranean Sea. If there was over fishing, which fish species were affected and what fishing techniques were used. We also explore the methods of garum production. Garum has gone from being popular to it falling out and then becoming popular again and being reintroduced into different societies. Looking at modern 'fish sauces' shows a huge variation from the original making of garum including Worcester sauce and coloratura di alici used in Italy.

**Biology**

### **Kieu Tran**

#### ***Exploring Bacteriophages in Nature: SmallMight***

##### **Co-Author(s): Domani Turner-Ward**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

Bacteriophages are viruses that survive by inserting its DNA into bacteria, replicating, and freeing its offspring by lysing the bacteria. Phages were studied locally to contribute to the Actinobacteriophage Database, which collaborated with the Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) program. A sample of soil in Pensacola, Florida, under a plum tree was isolated for bacteriophages using host bacterium *Microbacterium foliorum*, purified, and amplified to isolate its DNA. The phage, SmallMight, which created 2 mm diameter clear plaques, had a titer of  $5.1 \times 10^9$  pfu and DNA concentration of 32.3 ng/QL, and classified under the family Siphoviridae. Another bacteriophage chosen to be fully sequenced incorporated bioinformatic softwares and databases for annotating its proteins and functions, cluster and subcluster. SmallMight's sample was sent off for sequencing using DOGEMS (Deconvolution of Genomes after En Mass Sequencing), which combined DNA of different phages to be sequenced. Primers were designed and used for polymerase chain reaction (PCR) to cut and match pieces of the DOGEMS sequence with SmallMight's samples. SmallMight was found to be a part of Cluster E with a subcluster, which was uploaded into the database. DOGEMS identified SmallMight's cluster, along with other phages in the mass sample, which provided collective insight towards understanding bacteriophages in nature to a molecular level, which contributed to the Actinobacteriophage Database. Further exploration of bacteriophages could involve analyzing the soil habitat of phages found to better understand the ideal conditions that could yield higher phage isolation success rates.

**Biology**

**Donald Vaughan****Biology*****Completing the *Donax Variabilis* Coquina Mitochondrial Genome with a Stitching Approach*****Co-Author(s): Joshua Mishoe, Megan Gulsby**

Faculty Mentor(s): Hui-Min Chung, Biology

Lead Author Department: Biology

Session: Main Poster Session

The coquina clam in the great Pensacola beach area, *Donax variabilis*, is an bioindicator species. Despite their service to mankind, their biology and genetics are not well studied. We began our study on the coquina biology by starting with the goal of determining their complete mitochondrial genome. *Donax variabilis*, like other eukaryotes, contains a circular mitochondrial genome. We isolated the mitochondria from the foot and siphon tissue of the clam and then extracted DNA from there. In fall 2018, we obtained the first draft of coquina mitochondrial DNA assembly, which gave about 11 kb size of the genome. With the bioinformatics study, we identified only 8 of the 13 protein coding genes. In comparison to the reference genomes published by Desalle et al. in 2017, which all have about 17 kb in size, it was clear the first draft we had was inadequate. To obtain the DNA sequence of the last ~6 kb that contains the missing 5 protein-coding genes (NADH Subunit 1, NADH Subunit 3, NADH Subunit 4L, NADH Subunit 5, and Cytochrome b), primers were designed to amplify each of these genes. In the meantime, we were able to send off 2 more mitochondrial DNA samples to do the next generation sequencing. Overall, we successfully obtained the 17 kb mitochondrial DNA sequence of *Donax variabilis*, and annotated all 13 protein-coding genes. We are in the process of annotating the rest of the genome including rRNA and tRNA genes. We will discuss the final results in the symposium.

**Nicholas Wagner****Biology*****Spatial and Temporal Variability of Abiotic and Biotic Components of Thompson Bayou***

Faculty Mentor(s): Michelle Jenson, Biology

Lead Author Department: Biology

Session: Main Poster Session

Freshwater wetlands are unique habitats with typically high levels of biodiversity. Both interest and research efforts have increased regarding these ecosystems in the past several decades, leading to legislation for their protection, including the "Protection of Wetlands" executive order, the Clean Water Act of 1972, and subsequent regulations and stipulations (Votteler 2002). Despite the increased awareness of the value of these threatened ecosystems, research has focused primarily on functional aspects of freshwater microbial ecology, rather than elucidating microbial composition (Bodelier 2013). This lack of detailed analysis likely arose from the impetus of enhancing public—and legislative—awareness of the necessity of wetland protection, as evidenced by considerable work done in peat bogs (Preston 2012) and exceptionally acidic wetlands (Bodelier 2013). Equally important to the composition of microbial communities is the relationship between microbes and their abiotic environment. Although many studies focus on individual components of wetland ecosystems, combining both abiotic factors and biotic communities is essential for a complete understanding of ecosystem interconnectivity. This is especially is especially the case for

wetlands in an urban interface, such as that of a college campus. This study is comprises two facets. The first is to quantify the basic spatial and temporal patterns of abiotic factors across Thompson Bayou as it feeds into Escambia River. The second examines aquatic-microbial communities as they vary with spatial and temporal patterns of abiotic factors.

**Megan Walkinshaw****Biology*****Comparison of Environmental DNA Detection Rates using LoBind and Regular Falcon Tubes*****Co-Author(s): Jenna King**

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

*Ambystoma bishopi*, otherwise known as the Reticulated Flatwoods Salamander (RFS), is a salamander species native to Northwest Florida. The RFS inhabits slash and longleaf pine flatwoods and is adapted to a fire-dependent ecosystem. Their habitat is dwindling as deforestation increases and habitat quality is diminishing due to wildfire suppression. As habitat loss and degradation continue to increase and with the federal designation of the RFS as an endangered species, it is especially important to monitor RFS. Traditional methods, such as dipnetting and surveys, are challenging because of having to target elusive larvae in ephemeral ponds. Environmental DNA (eDNA) offers an easier, less expensive, and less invasive approach by extracting DNA from pond water samples to confirm the presence of RFS. Using eDNA, there is no need for direct contact with the individuals, making this method preferred for rare, imperiled species. However, eDNA detection rates depend on the protocol used for sampling and analyzing. Detection rates may be hindered by DNA binding to the polypropylene sample tubes. If DNA is binding to the sample tubes, then it might be inhibiting positive detection results by lowering the amount of DNA available to detect. The purpose of this study is to determine if there is a significant difference between using normal Falcon (polypropylene) tubes to LoBind Falcon tubes in the detection of RFS DNA from eDNA water samples. The anticipated outcome is that there will be a significant difference between the samples tube types, which might affect development for future eDNA protocols.

**Charlie West****Biology*****Westenberg78: Putting the Phun in Phage*****Co-Author(s): Piper Hasenberg**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Biology

Session: Main Poster Session

A bacteriophage is a microscopic virus that targets and attacks certain bacteria in order to replicate themselves using the bacteria's DNA. Bacteriophages can be potentially useful as an alternative for antibiotics as they evolve alongside the bacteria, preventing bacterial resistance. The reason for this research is to find and classify new bacteriophages for possible future medical applications. Throughout this project, the goal was to locate a bacteriophage, extract its DNA, classify said phage, and annotate the DNA. The first step was to collect a soil sample and test to find a phage. Next, the phage sample was purified to ensure only one phage was present. Afterward, the emergent phage, later named Westenberg78, was

amplified using *M. foliorum*. Once the titer was amplified to  $1 \times 10^{10}$ , the DNA was extracted and sequenced using a DOGEMS sample. After sequencing, PCR was used to confirm the cluster of Westenberg78 and the genes were classified and annotated. Westenberg78 was labeled a Siphoviridae phage with a 1 mm clear center and an additional 1 mm turbid ring. Westenberg78 was later classified as a member of the E Cluster and some of its genes and overall functions were able to be discovered. Bacteriophages are a crucial part of the future study of medicine, as their applications are far and wide among the world of antibiotics. Throughout the course of this experiment, Westenberg78 was able to be studied in-depth through the collection and manipulation of a mere soil sample.

**Sheridan Wilkinson**

**Biology**

***Investigating the Epigenetic Effects of Microplastic Exposure in Bluegill (*Lepomis macrochirus*) Cells using Methylation Sensitive-AFLPs***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Marine debris is an increasing threat to the world's oceans and the abundant organisms that inhabit them. Surveys of this marine debris have indicated that 60–90% is comprised of plastics; however, many of these surveys focus mostly on macroplastics. Microplastics are remnants of these macroplastics that have been broken down to fragments smaller than 5mm through wave action and other natural processes or were originally manufactured to have micron-sized dimensions. These fragments are then consumed by microscopic marine organisms, like zooplankton, and are bioaccumulated up the trophic levels. Accumulation of plastics in the gut in organisms can have a variety of repercussions, such as starvation due to blockage in the digestive tract, chemicals used in producing plastics leaching into the cells of organisms, and modifications to the genome. One such modification is methylation which is often associated with a decrease in gene activity. All organisms naturally accumulate methylation in their genomes throughout their lives; however, microplastics could exacerbate this process and affect the cells functions. While methylation has been studied in teleost fishes, little work has been done to show how microplastic exposure affects this process in any species. For this study, we investigated the accumulation of methylation due to microplastic exposure within the genome of cultured Bluegill (*Lepomis macrochirus*) cells using methylation sensitive-AFLPs. Following MSAFLPs, the methylation state was analyzed through capillary gel analysis and electropherograms.

**Cara Womacks**

**Biology**

***DNA Barcoding of Crustacea from Artificial Reefs in the Gulf of Mexico***

Faculty Mentor(s): Alexis Janosik, Biology

Lead Author Department: Biology

Session: Main Poster Session

Artificial reefs serve an important ecological role by providing a hard surface for sessile organisms to attach to, thereby drawing in predators of these organisms and establishing a working ecosystem. Many of the small invertebrates that live on reefs are poorly studied. This study aims to ameliorate our understanding of the invertebrate communities on artificial reefs by using molecular techniques to investigate the biodiversity of brachyuran decapods living on and among

artificial reefs in the northern Gulf of Mexico. Specimens ( $n=1230$ ) were collected from six different reefs across three seasons (spring, summer, and fall) using Autonomous Reef Monitoring Structures (ARMS) and were initially sorted into groups based on morphology. DNA barcoding was used to classify specimens. The COI mitochondrial sequence was amplified through PCR, and the sequences obtained from this process were compared to the BLASTn database to determine species classifications. This project aims to assess the biodiversity and spatial distribution of crustacean species throughout the northern Gulf of Mexico. Secondary objectives of the study are to track how species composition varies with the seasons and to provide information on the natural history of these organisms by tracking when females are gravid and when megalops larvae are present on the reef. As invertebrates are an integral part of the lower trophic levels of the food chain, our findings will ultimately contribute to our understanding of the whole artificial reef ecosystem.

**Grace Worley**

**Biology**

***The Effects of Microplastics on the Aquatic Plant *Ceratophyllum demersum****

Faculty Mentor(s): Hui-Min Chung, Biology

Lead Author Department: Biology

Session: Main Poster Session

Plastic particles smaller than 5mm, known as microplastics, are a relatively recently-discovered type of pollution caused by the degradation of plastic waste into smaller pieces. They are also found in cosmetics such as abrasive scrubs and toothpaste. While small, these particles can have a tremendous impact on the environment, as they are consumed by organisms at lower trophic levels, and bioaccumulate at higher trophic levels, leading to negative effects on the health of those organisms. While the effects of microplastics on animals have been well-researched, less research has been done on the effects these particles might have on plants. Previously I have studied the effects of microplastics on the aquatic plant *Ceratophyllum demersum* by examining chlorophyll production and particle absorption and retention. This study showed that while the plants do appear to absorb and retain microplastics, the effects that these particles have on chlorophyll production is unclear. I am currently investigating if microplastics affect plants on a gene expression level, using the same aquatic plant. By studying the expression of genes responsible for the production of abscisic acid (ABA), a plant stress hormone, I will be able to determine the degree to which exposure to microplastics produces a stress response in plants. I will discuss my progress during the symposium.

**Matthew Yates**

**Biology**

***Expression of HIF1- $\alpha$  in a Zebrafish tailfin injury, following exposure to gingerol***

**Co-Author(s): Rachel Wright, Anita Aguirre, Blake Doerr**

Faculty Mentor(s): Scott Taylor, Biology

Lead Author Department: Biology

Session: Main Poster Session

HIF1- $\alpha$  (Hypoxia-Inducible factor 1 alpha) is a factor that responds to a decrease in the levels of intracellular oxygen. HIF1- $\alpha$  is involved in the inflammatory response by forming a heterodimer with ARNT molecules, which binds with the DNA at a specific sequence. Originating in South-East Asia, gingerol is believed



to have been used in traditional herbal medicines, due to the anti-inflammatory and antioxidative properties that gingerol possesses. The purpose of this study is to investigate the anti-inflammatory effects of gingerol on the period of regeneration for an injury to the tailfin of Zebrafish. For this study, PCR primers were designed to amplify the HIF1- $\alpha$  gene of interest. RNA was collected and purified from a piece of Zebrafish tailfin, and was then converted into cDNA at 0 hours post injury, 24 hours post injury, and 48 hours post injury. RT-PCR and DNA electrophoresis were utilized to evaluate the level of expression of HIF1- $\alpha$  at each given time point. A zebrafish was treated with 5mg/L of gingerol in a 0.05% DMSO solution. At the 48 hours post-injury time point for this fish, RNA was collected from the tailfin and purified. RNA was also collected from the tailfin of a control zebrafish at this time point, to which the experimental zebrafish tailfin RNA will be compared and analyzed. It is believed that the exposure to gingerol should lead to an increase the expression of the HIF1- $\alpha$  gene, therefore suggesting increase in the inflammatory response, and a subsequent decrease in the period of regeneration.

### Haley Yuska

#### ***The Biological Effects of Probiotic Supplementation in *Drosophila melanogaster****

#### **Co-Author(s): Caitlyn Waters**

Faculty Mentor(s): Hui-Min Chung, Biology

Lead Author Department: Biology

Session: Main Poster Session

The gut microbiota is the collection of microbes that inhabit an animal's gastrointestinal tract. Oftentimes, probiotic supplements are recommended to people with a deficit in the quality or quantity of microbes in their gut. (Scott, 2016). There is still much unknown, however, regarding the benefit of probiotic supplementation in healthy individuals. Our lab has begun to investigate this question using the fruit fly, *Drosophila melanogaster*, as a model system due to the physiological similarities between the fly and humans. Our working hypothesis includes the idea that an animal can regulate its gut microbial homeostasis. As a result, the introduction of *Lactobacillus plantarum* probiotics in the diet will not significantly change the microbiota composition in the wild type fly whereas for the pink1 mutant fly, which might have lost the ability to maintain microbial homeostasis, a great change in its microbiota composition is to be expected. PINK1 is believed to play a role in gut microbe homeostasis and its loss of function is linked to early development of Parkinson's disease. (Feltzin et al., 2019). We are currently investigating if there are any changes in the flies' microbiota composition, as well as the lifespan and locomotor ability, of the wild type and the pink1 fly with and without the supplementation of *L. plantarum* probiotics. Results of this study will be discussed at the conference.

### Biology

## CHEMISTRY

### Zahra Alikhani

### Chemistry

#### ***Synthesis of Heterocycles via Electrophilic Carbon and Sulfur Cyclization***

Faculty Mentor(s): Tanay Kesharwani, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

A novel carbocyclization method via electrophilic carbon was optimization for synthesis of functionalized benzo[b]thiophenes and isoxazoles derivatives. The electrophilic carbon reaction uses  $\text{FeCl}_3$  and dichloroethane to generate functionalized benzo[b]thiophene derivative or functionalized isoxazole derivative. The development of diverse methods for new carbon-carbon bonds is necessary for pharmaceuticals. Rexulti, an atypical antipsychotic, employs benzo[b]thiophene as the core structure, and current studies have determined benzo[b]thiophene as an effective anticancer, antibacterial, and antidepressant for future applications. Isoxazole derivatives are well known for nonsteroidal anti-inflammatory drug and beta-lactamase resistant antibiotics like flucloxacillin, cloxacillin, and dicloxacillin.

### Matthew Cloyd

### Chemistry

#### ***Table Salt Mediated Environmentally Benign Synthesis of Anticoagulant Molecules***

Faculty Mentor(s): Tanay Kesharwani, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Traditional Chinese Medicine has used techniques to actively prevent cardiovascular diseases (CDVs) using naturally extracted compounds from *Hirudo*, a genus of leeches. Specifically, Hirudinoidine A is one of the active molecules known to have positive effects in combating CDVs. With an ultimate goal of synthesizing the core structure of Hirudinoidine A, a simplified model system was designed where the pyrazine was replaced by easily accessible benzene. To demonstrate this model's effectiveness, five different compounds were cyclized using table salt, ethanol, and small amounts of copper and persulfate. The persulfate acted as an oxidant to perform the  $\text{Cu}(0)$ - $\text{Cu}(II)$  redox reaction of copper in order to reduce the amount of metal needed for the reaction. Several functional groups worked well with this approach, however sterically hindered groups and certain electron withdrawing groups slowed down the rate of reaction, and the competing sulfur oxidation hindered the desired cyclization reaction which resulted in the lower yields of the products. Further study of this reaction by employing different conditions such as rate of addition of oxidant, temperature, and stoichiometry will be required to reduce the undesired oxidation of starting alkyne and improved the yield of the cyclized product.

**Raquel Conceicao*****Soluble Copper (I) Thiolates*****Co-Author(s): Duong Thuy Doan**

Faculty Mentor(s): A. Timothy Royappa, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Gold nanoparticles (NPs) have been known since antiquity, being responsible for the color of red glass (e.g., in the 4th century Roman Lycurgus cup). These NPs are currently being investigated intensively for a number of important applications such as drug delivery, gene therapy, biosensors and surface plasmon resonance enhancement. A major recent development has been the synthesis of bimetallic NPs, particularly ones consisting of gold and copper. The presence of a few atoms (or even a single atom) of a different metal in a gold NP significantly changes its properties, greatly increasing the range of possible applications. One of the goals of current research in this area is to be able to control the composition and morphology of such bimetallic NPs at the single-atom level. There are two major methods for synthesizing both gold NPs and bimetallic NPs: the aqueous method and the non-aqueous method. In both cases, tetrachloro-auric(III) acid ( $\text{HAuCl}_4$ ) is reduced to metallic gold in a controlled manner. The Millstone group at the University of Pittsburgh has successfully synthesized bimetallic gold-copper NPs using a hybrid technique involving a water-soluble thiol-modified poly(ethylene glycol) (PEG). They have found preliminary evidence that the precursors to their bimetallic NPs are neutral thiolate complexes. However, these proposed bimetallic precursor molecules have never been isolated or structurally characterized, although the all-gold and all-copper molecules are known. Soluble copper(I) thiolates will be made for further study.

**Chemistry****Christopher Cunningham*****Development of Novel and Environmentally Benign Organic Synthetic Methodologies*****Co-Author(s): Soha Kohan**

Faculty Mentor(s): Tanay Kesharwani, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

An efficient electrophilic thiocyanate cyclization reaction was developed for the synthesis 3-thiocyanatobenzo[b]thiophenes are developed. In this reaction, copper (II)sulfate pentahydrate, potassium thiocyanate, and sodium persulfate are used to 2-phenyl-3-thiocyanatobenzo[b]thiophenes in high yields. These reagents are easy to handle and inexpensive to achieve electrophilic thiocyanate cyclization. Benzo[b]thiophenes are well established in pharmaceuticals and are marketed as potential drugs, such as, carboxamide V and hydroxamic II that has a potent and selective anti-hepatitis C virus and antimalarial activity. In another project, a successive metal-free addition and hydrolysis reaction are implemented to synthesis a diverse library of 1,3 diketones. This methodology employs environmentally friendly as the vinegar (acetic acid) and abundantly available morpholine is employed for the synthesis of various 1,3-diketones in moderate to high yields. Diketones are any important class of building blocks for heterocycles and are valuable feedstock for industrial applications, such as preparation of ketoamines, polymerization of unsaturated bonds, and fuel additives.

**Chemistry****Victoria Drake*****Early Biomarker for Alzheimer Disease*****Co-Author(s): Victoria Odom**

Faculty Mentor(s): Rodney Guttman, Biology

Lead Author Department: Chemistry

Session: Main Poster Session

Alzheimer's Disease is a serious medical condition affecting millions worldwide, with numbers expecting to double in the next 30 years. Specific biological changes occur that define the disease including amyloid-beta plaques and neurofibrillary tangles. These observations have led to the hypothesis that changes in these protein components have the potential to serve as indicators of disease progression. The need for identifying biomarkers has accelerated due to the fact that there have been no successful clinical trials to treat or cure the disease. Additionally, biochemical changes in the brain are thought to occur decades before the clinical manifestations such as short-term memory loss are thought to occur. Therefore, the current research aimed to identify multiple selective and specific tau-based screening profiles in blood to aid in the diagnosis and treatment of Alzheimer's Disease using phage-display. Phage-display is a technique that is used to probe for different protein-protein interactions. Taking advantage of this method to screen human blood for post translational modifications to tau that can be isolated by sandwich ELISA from human blood. Specifically, using a random 12-mer library that has over 2 billion random conformations to screen confirmed AD subjects for altered forms of tau. Identifying a phage-based biomarker is the first step in exploring potential causes of the different tau pathologies, but more importantly the modifications tau in AD undergoes as it makes its way through the bloodstream. Preliminary data have shown the method is feasible method to identify and tract disease progression.

**Chemistry****Victoria Drake*****Detection of Real World Samples Using SALDI Mass Spectrometry*****Co-Author(s): Michelle Lapak, Taylor Best, Victoria Drake, Rosemary Nguyen**

Faculty Mentor(s): Karen Molek, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Quinine is a small, chiral, organic biomolecule commonly studied in forensics and medicine. Since quinine is a relatively small molecule, it is difficult to detect using mass spectrometry, however, a better method of analyzing quinine may be attainable using (R-TOF) SALDI mass spectrometry. SALDI, or surface assisted laser desorption/ionization, is a type of mass spectrometry that uses an inorganic nanoparticle surface to help reduce the impact of the ionization energy on a small organic biomolecule, which reduces fragmentation of the sample. The effectiveness of which nanoparticle surface is under consideration, when comparing large versus small cobalt (II/III) oxide. The hypothesis being that since smaller molecules have a greater surface area to volume ratio, the small cobalt (II/III) oxide nanoparticle surface will be able to absorb/desorb greater energy from the laser and the signal observed will be greater than that of a large cobalt (II/III) oxide nanoparticle surface. At the beginning of the 20th century, the laser was introduced in order to ionize the compound in a vacuum to move it into the gas phase, creating ions. The ions race to the detector at the end of the flight tunnel with the understanding that the larger the molecule, the more

**Chemistry**

time it would take to reach the detector. The mass spectrometer also includes a reflectron feature, where particles are reflected and sent down a second flight tube to a detector, improving clarity of results and reducing noise. Improvements in SALDI MS can lead to further innovation in forensics and medicine.

### **Victoria Drake**

#### **Argo Research Association**

#### **Co-Author(s): Lali Gutierrez**

Faculty Mentor(s): Allison Schwartz, Office of Undergraduate Research

Lead Author Department: Chemistry

Session: Main Poster Session

The goal of this research was to investigate different successful undergraduate research programs implemented by other universities across the state of Florida to custom make a program specifically tailored to the University of West Florida's (UWF) needs. With almost 500 students actively engaged in research by funding from the Office of Undergraduate Research, a group of this size can be difficult to manage. For this reason, the majority of universities across the state have instituted a student-led council dedicated to undergraduate research which serves to educate, teach, and involve students via their day-to-day operations. These operations draft their own ideas as a legislative body. Unsurprisingly, these types of councils involve a student government association (SGA) structure, and many of these universities' programs are funded by their respective schools' SGA. By networking with representatives of these programs at the Florida Undergraduate Research Leadership Summit, the following council, Argo Research Association (ARA), is proposed. The UWF ARA will be headed by a president, secretary, and treasurer. These three positions hold specific responsibilities. Each research-involved department will have at least one representative on the council, with 1 additional representative assigned for every 50 students participating in active research within a department. At least 2 ambassadors will be assigned to each representative. Representatives and ambassadors each have their respective duties. The implementation of this proposal is meant to garner greater outreach of undergraduate research at UWF and foster a greater community of peer student research schoolwide.

**Chemistry**

### **Leia Fannin**

#### **Measurement of Furan Content in Roasted and Green Coffee Beans**

#### **Co-Author(s): Mercedes Vera, Julia Schwieg**

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Furan is a highly volatile compound formed in the thermal processing of foods. Classified as a "possible human carcinogen" by the International Agency for Research on Cancer, it is of interest in the study of commercial foods. Furan is formed in coffee through the roasting of coffee beans, and can be a possible source of exposure to adults. Due to the high volatility of furan, solid phase micro extraction (SPME), is the method of choice for furan analysis. By injecting the polymeric needle into the head space of a vial containing the sample and injecting it directly into a gas chromatography mass spectrometry system (GC-MS), more sensitive samples can be tested. By measuring the furan content in green coffee and comparing the concentration that was measured in roast coffee, the amount of furan that is formed through roasting can be determined.

**Chemistry**

### **Megan Hinrichsen**

#### **Alternative Synthetic Routes to Copper(I)-Based Trifluoromethylating Agents**

#### **Co-Author(s): Tyler Thompson**

Faculty Mentor(s): A. Timothy Royappa, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Attempts were made to synthesize the two industrially and pharmaceutically relevant trifluoromethylating agents tris(triphenylphosphine) trifluoromethyl copper(I) and (phenanthroline) trifluoromethyl copper(I), also known as the Trifluoromethylator. The proposed method for synthesizing both compounds proceeds through the corresponding copper(I) complexes phenCuX or (PPh<sub>3</sub>)<sub>3</sub>CuX. A number of these intermediates were successfully synthesized by the direct reaction of weak acids (nitromethane, phenol, cyclopentadiene, etc.) with copper(I) oxide in good yield. The phenolate intermediate could be purified by recrystallization as white flaky crystals; spectroscopic characterization and single-crystal X-ray crystal structure determination confirmed the synthesis. Efforts are underway to convert these intermediates to the two target compounds. All attempts at synthesizing the (phenanthroline) copper(I) phenolate result in a (bis)phenanthroline copper(I) complex ion with various counterions.

**Chemistry**

### **Michelle Lapak**

#### **SALDI-MS Analysis of Real World Samples Utilizing Transition Metal Oxide Nanoparticles as Surfaces**

#### **Co-Author(s): Taylor Best, Victoria Drake, Rosemary Nguyen**

Faculty Mentor(s): Karen Molek, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Surface-assisted laser desorption/ionization mass spectrometry (SALDI-MS) has a number of real world applications, including forensics, pharmaceuticals, and medical diagnosis. SALDI-MS provides straightforward sample preparation and quick results. Non-functionalized transition metal oxide (TMO) nanoparticles make ideal surfaces for the SALDI-MS analysis for a variety of reasons. TMO nanoparticles do not cause matrix interference in the low mass range because they are inert, allowing for the detection of both large and small molecules. They can efficiently adsorb UV light and have a high surface area to volume ratio. These qualities make adsorption of a wide range of analytes efficient. Previous experiments have shown iron (II,III) oxide (Fe<sub>3</sub>O<sub>4</sub>) and cobalt (II,III) oxide (Co<sub>3</sub>O<sub>4</sub>) nanoparticles to be suitable for the SALDI-MS analysis of biomolecules. Herein we show TMO nanoparticles are also suitable SALDI surfaces for the analysis of complex mixtures and real world samples. A human serum sample and commercial grade tonic water were analyzed via SALDI-MS using both Fe<sub>3</sub>O<sub>4</sub> and Co<sub>3</sub>O<sub>4</sub> nanoparticles. In addition, human serum samples spiked with adenosine and tonic water samples spiked with quinine were analyzed using via SALDI-MS. Signal-to-noise (S/N) ratios and signal intensities for adenosine and quinine in the LDI method were calculated and compared. Preliminary results indicate that SALDI-MS analysis of complex mixtures using Fe<sub>3</sub>O<sub>4</sub> and Co<sub>3</sub>O<sub>4</sub> nanoparticles yields higher signal intensities than LDI.

**Chemistry**

**Ian Parker****Chemistry*****Wavelength Dependence Toxicity Using Various Oils*****Co-Author(s): Lauren Heidenreich**

Faculty Mentor(s): Pamela Benz, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Since the Deepwater Horizon oil spill in 2010, a significant amount of work has been done to study the natural weathering processes of petroleum in the environment and how it impacts biological systems. To help assess the overall impact of petroleum on the ecosystem, a key consideration in understanding the mechanism of toxicity is examination of components produced from petroleum products through photochemical processes. Samples of water mixed with motor oil are called water accommodated fractions (WAFs) and are commonly used to mimic environmental conditions when an oil spill occurs. Over time, water soluble species separate from the insoluble water species of the oil and partition into the water phase of the WAF. The toxicity of the resulting water fraction is of great interest. The objective of the study is to observe toxicity effects due to photochemical weathering of motor oils. Previously, it was determined that a Surrogate oil was the most toxic of the oils that were tested, when filtered with green light (520-560 nm). Acidic and basic species formed in WAFs incubated under various light conditions were extracted using liquid/liquid extraction. The resulting fractions were examined for toxicity using bacterial growth response as a measure. Overall the oil fractions that were exposed to light showed a decrease in toxicity in comparison to oils that were kept in the dark.

Enzyme mimics are extensively documented as viable in vitro scaffolds for drug binding studies. In this investigation, a novel mimic of prototypical metalloprotease carboxypeptidase-A was designed by combining a macrocyclic triamine (1,5,9-Triazacyclododecane) and the primary face of an oligosaccharide ( $\beta$ -Cyclodextrin). Together, the triamine (TACD) and oligosaccharide ( $\beta$ -CD) are analogous to the carboxypeptidase-A active site and substrate binding region, respectively. TACD was synthesized by an alkylation/reduction reaction followed by acid hydrolysis (25-35% yield). The ligand was formed via N-alkylation of TACD to the primary alcohol carbon of  $\beta$ -CD. This supramolecular structure was subsequently purified by ion-exchange chromatography and confirmed by nuclear magnetic resonance spectroscopy ( $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR).

**Aimee Phillips****Chemistry*****Synthesis of Novel Fluorophores with Pyridine Core Structure*****Co-Author(s): Christopher Cunningham**

Faculty Mentor(s): Tanay Kesharwani, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Recently we synthesized several organic molecules which exhibit the desired fluorophore property. The methodology to synthesize these novel organic fluorescent molecules was unprecedented in current literature. In our pyridine molecule, the N,N-dimethyl group acts as electron donor, whereas the alkyne group acts as an electron acceptor results in a low band gap. The four compounds we have synthesized so far have resulted in the emission in violet, blue, and cyan region of visible spectrum. We are synthesizing the next generation of these novel fluorophore molecules via one step process from our already synthesized alkynyl pyridines. Once we established the synthesis of these novel molecules, we would study their properties using UV visible spectroscopy and find their quantum efficiency. In the future, we would like to tune the band gap in such a way that we could cover the whole spectrum in the visible range.

**Sophia Porter****Chemistry*****Solid-Phase Microextraction Gas-Chromatography Mass Spectrometry of Spices*****Co-Author(s): Rebecca Boutwell**

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Spices are a huge part of the food industry, but very few know the organoleptic properties behind this large economy. The authenticity of these spices could be easily counterfeited which creates a large issue for the general public. Trace level organoleptic compounds may not be visible by extraction which is common for organic compounds. Solid phase microextraction (SPME) is an analytical technique used in analyzing volatile organic compounds, such as those found in spices. This technique only requires 20 minutes to run and employs a polymer coated fiber with an extraction phase. After extraction, the polymer coated fiber is directly inserted into a gas-chromatograph mass spectrometer (GC-MS). The GC-MS combines the features of gas chromatography and mass spectrometry to properly analyze small molecules. The gas chromatograph uses the phase properties and a column to properly separate the molecules within a mixture which allows the mass spectrometer to separate and ionize the molecules. SPME GC-MS is suitable for analyzing small organic compounds because the lack of solvent interference and minimal run time allows for the accurate analysis of various spices. In this presentation, basil, parsley, dill and rosemary were analyzed in both fresh and dried states. Additionally, the major volatile and the organoleptic profiles of these spices were identified.

**Christina Pizza****Chemistry*****Synthesis of a Zn(II) Binding Ligand with Hydrophobic Binding Site*****Co-Author(s): Kevan English**

Faculty Mentor(s): Ajay Lajmi, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

**Jeremy Redfern****Chemistry*****Electrochemical Synthesis of Biologically Useful Benzo[b]thiophenes*****Co-Author(s): Bradley Taylor**

Faculty Mentor(s): Ajay Lajmi, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Organic carbocyclic and heterocyclic molecules are useful in our day-to-day life as they are an integral part of life-saving drugs, plastics, adhesives, paints, petrochemicals, pesticides, insecticides, and organic electronics. The current synthesis methods of these heterocycles require toxic and corrosive reagents and harsh reaction conditions such as high temperature, prolonged reaction time, and high pressure. There is a constant requirement for creating new organic heterocyclic molecules in a timely, atom-economic, and sustainable



method. Classic technologies, such as photochemistry and electrochemistry, have reemerged due to their efficacy in creating these useful heterocyclic organic molecules. We propose the synthesis of one such heterocyclic molecule, benzo[b]thiophene, using electrophilic iodocyclization reactions by electrochemical methods. Benzo[b]thiophene is a sulfur-containing heterocyclic molecule known for its application in the area of medicinal chemistry. Benzo[b]thiophene exhibits a range of biological activities such as anti-cancer, antibacterial, antifungal, selective estrogen receptor modulation, and leukotriene synthesis inhibition. The previously reported methods require corrosive halogens, transition metal such as copper and palladium, and strong oxidants such as ceric ammonium nitrate and sodium persulfate. We propose performing the desired iodocyclization reaction using a method that employs nontoxic and environmentally benign reagents such as sodium chloride and ethanol. We will first determine the redox potential of the reactant by cyclic voltammetry, and subsequently determine the vital electrochemical parameters such as reaction times, types of electrodes, reactant concentrations, types of electrolytes, and solvents at the analytical scale.

**Julia Schwieg**

**Chemistry**

***Computer Software Analysis by Solid-Phase Microextraction Gas-Chromatography Mass Spectrometry of Bakery Products***

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

MassWorks is a computer software that allows for the recognition of a PFTBA tune gas within a GC-MS sample run. From this one can obtain an accurate mass calibration and apply this calibration to any desired sample. This calibration allows for the calculation of the high-resolution molecular weight and isotope ratio determination for the sample under experimentation. This software was installed onto an Agilent Intuvo Single Quadrupole 5977B Gas Chromatograph Mass Spectrometer. The technique of solid phase microextraction (SPME) was utilized for sampling of bakery products. SPME is an extraction sampling technique that utilizes a polymer coated fiber with an extraction phase to absorb volatile organic compounds. After extraction, the polymer coated fiber is directly injected within the injection port of the gas-chromatograph mass spectrometer (GC-MS). SPME GC-MS is suitable for analyzing small volatile organic molecules because of the lack of solvent interferences and minimal sample preparation. This allows for the accurate analysis of bakery products. In this presentation, cinnamaldehyde and vanillin were quantified utilizing the technique of SPME GC-MS within homemade chocolate chip cookies. In addition, the high-resolution molecular weights were calculated, and the isotope ratios were identified utilizing the MassWorks software.

**Ines Telebak**

**Chemistry**

***Synthesis of a New Prosthetic Group for Radiolabeling Peptides***

Faculty Mentor(s): Thomas Moore, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Positron emission tomography (PET) requires an efficient method of radiolabeling to incorporate the positron emitting isotope into the tracer molecule. Fluorine-18 is among the most widely used PET isotopes because it

is readily available. While many PET tracers are small molecules that are easily radiolabeled, peptides present difficulty in radiofluorination because they cannot tolerate harsh reaction conditions. To overcome this, thiol-reactive prosthetic groups have been developed to link sulfur-containing peptides with radiofluorine moieties under mild conditions. Based on literature, a pyridine ring was substituted for a benzaldehyde ring because previously this substitution caused a change in the physical properties of the prosthetic group. Prosthetic groups incorporating a pyridine ring show increased polarity, potentially affecting their coupling properties and offering the potential for improved synthesis. This is beneficial to improving the yield of peptide-based PET tracers, offering improved methods for patient diagnosis.

**Noah Thrift**

**Chemistry**

***Characterization of Basil Utilizing Several Analytical Techniques***

**Co-Author(s): Julia Schwieg**

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Basil contains many applications, ranging from medicinal purposes to cosmetic applications. Studies have shown that basil can provide aid for the prevention of certain cancers. Basil is high in vitamin K, vitamin A, and vitamin C, as well as the following minerals: calcium, iron, and potassium. This investigation utilized five different analytical techniques to analyze the; properties of basil leaves: solvent extraction, solid-phase microextraction gas-chromatography; mass spectrometry (SPME GC-MS), ash content determination (ashing), inductively coupled; plasma-optical emission spectrometry (ICP-OES), and saponification. Increasing the engagement between students and chemistry at UWF has been an important priority. This presentation will be utilized to improve the curriculum of the general chemistry laboratories at the University of West Florida (UWF). These techniques will allow early science undergraduate students the opportunity to experience advanced chemistry techniques not commonly shown to first-year undergraduate students.

**Monika Vera**

**Chemistry**

***Solid-Phase Microextraction Gas Chromatography Mass Spectrometry of Vape Juice (e-cigarette juice)***

**Co-Author(s): Cassidy Palmer**

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

E-cigarette liquid and vape juice has been widely accepted as a healthier alternative to cigarettes due of the absence of inhalation of tobacco and its additives. This has led to unregulated manufacturing methods and consumption of unknown products found within e-cigarette liquids. In this work, volatile organic components will be determined by solid phase microextraction (SPME). Specifically, glycol content and by-products of carcinogens will be studied as these have long-term impacts on respiratory and dental health. SPME is an extraction technique that utilizes a polymer-coated fiber to absorb the volatile organic compounds within a sample of interest. This fiber is directly injected into the injection port of the GC-MS where the instrument allows for the accurate

analysis and identification of the volatile organic compounds within the experimental sample. SPME GC-MS is an ideal technique for this investigation because there is a lack of solvent interferences and minimum sample preparation during experimentation. Juices found within vape and e-cigarettes are extremely volatile which provides an advantage when analyzing by SPME GC-MS. In this presentation, the volatile organic compounds will be identified.

**Angelina Walling**

**Chemistry**

***Solid Phase Microextraction Gas- Chromatography Mass Spectrometry of Rosemary***

**Co-Author(s): Rebecca Boutwell, Sophia Porter, Julia Schweig**

Faculty Mentor(s): Karen Barnes, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Rosemary is a member of the mint family that is known to contain several health benefits which include but not limited to promoting brain function and increasing immune system productivity. However, very high doses of rosemary can cause pulmonary edema and vomiting. This has been attributed to high concentrations of rosmarinic acid within the rosemary. Rosmarinic acid is a very toxic compound that also poses as an environmental threat. Solid phase microextraction (SPME) is an extraction sampling technique utilized to obtain volatile organic compounds. This technique uses a specialized polymer-coated fiber to absorb the volatile compounds within the headspace of the chosen sample. After extraction, the polymer-coated fiber is directly injected into a gas chromatograph mass spectrometer (GC-MS). GC-MS is an analytical technique that uses the properties of gas chromatography and mass spectrometry. The gas chromatograph utilizes a column and the phase properties within the experimental sample to separate individual molecules within a mixture. These individual molecules are then ionized individually by the mass spectrometer. In this presentation, several different species of rosemary will be analyzed by the technique of SPME GC-MS. The link between the freshness of the rosemary and the concentration of the rosmarinic acid will also be investigated.

**Adeline Watson**

**Chemistry**

***Synthesis of A Triazacyclic Amine Metalloenzyme Mimic Building Block Using Sonication***

**Co-Author(s): Christina Pizza, Jeremy Redfern**

Faculty Mentor(s): Ajay Lajmi, Chemistry

Lead Author Department: Chemistry

Session: Main Poster Session

Catalytic hydrolysis of ester or amide substrates in biochemical reactions is mediated through metalloenzymes. The active sites of such enzymes contain two histidines, a glutamate and a water molecule. At physiological pH the zinc-bound water deprotonates, acting as a nucleophile for substrate hydrolysis. This paper presents the two-step synthesis of 1,5,9- triazacyclododecane (TACD) that is postulated to present three nitrogen donor ligands to coordinate with Zn (II) ions attempting to reproduce the coordination geometry in the active site of metalloenzymes. First, Hexahydropyrimidopyrimidine underwent a substitution nucleophilic bimolecular reaction (SN2) with 1,3-propane dithiolate resulting in a tricyclic salt of a carbocation intermediate at the tertiary carbon atom. Literature

reports this reaction occurring over 46 hours at room temperature. Using the sonication method reduced reaction time to a minimum of 4 hours at 50°C. Data collected for 3-, 4-, 5-, and 6- hour sonications confirmed that the product yield stabilized at a minimum of 4 hours reaction time at that temperature. This intermediate was subsequently reduced in situ by sodium borohydride to form an orthoamide. In the second step, the orthoamide was hydrolyzed to form TACD in an overall 25-30% yield, which was confirmed using nuclear magnetic resonance spectroscopy (1H NMR and 13C NMR) and gas chromatography-mass spectrometry (GC-MS). The TACD ligand will be used to further synthesize pendant groups for binding substrates to study their hydrolysis in presence of Zn (II) ions.

**Adeline Watson**

**Chemistry**

***Discovery and DNA Analysis of Bacteriophage EugeneKrebs***

**Co-Author(s): Abigail Williamson, Allie Carter**

Faculty Mentor(s): Kari Clifton, Biology

Lead Author Department: Chemistry

Session: Main Poster Session

INTRO/RESEARCH METHODS: Bacteriophages are viruses that infect bacteria. Bacteriophage research is increasing in popularity due to potential uses in the medical field, such as in fighting antibiotic-resistant infections, as well as bioremediation. Using methods of soil collection, a bacteriophage was collected and subsequently isolated using the host bacterium *Microbacterium foliorum*. The bacteriophage was given the name of EugeneKrebs. After isolation, a sufficiently high titer lysate (3.0x10<sup>10</sup> pfu/mL) of the bacteriophage was collected from which the DNA of the bacteriophage was extracted. The DNA was sent to the Pittsburgh Bacteriophage Institute for genome sequencing. Upon receiving the sequenced genome, the genome was annotated. RESULTS/FINDINGS: The DNA concentration of EugeneKrebs was measured to be 293.6 ng/mL, which was significantly higher than the DNA concentrations of the rest of the UWF SEA-PHAGES research group. The plaque morphology during the isolation and purification process manifested as tiny, pinpoint plaques with an average diameter of 0.75 mm, taking approximately fourteen thousand plaques to fill up a plate. After sequencing of the genome, EugeneKrebs was found to have 52 genes and was assigned to the EK cluster based on characteristics of the genome. The EK cluster contains 24 phages total. EugeneKrebs is a member of the Podoviridae family, which are generally characterized by the presence of short, noncontractile tails. CONCLUSION: As more data on bacteriophages is collected and analyzed, the understanding of these viruses will increase and will lead to further research regarding their medical benefits and other uses.

## COMPUTER SCIENCE

**Jackson Bare**

**Computer Science**

***Misinformation in the Time of Climate Change: The Generation Gap in the Effects of Misinformation***

**Faculty Mentor(s): Christopher Fenner, Communication**

Lead Author Department: Computer Science

Session: Main Poster Session

Whether it sparks massive chain reactions or influences daily life choices,

misinformation has the potential to be quite destructive. Public knowledge of climate change science has been significantly clouded due to misinformation campaigns. As college students today will be directly impacted by climate change and will heavily influence public policy in the coming years, it is crucial to understand the attitudes, behaviors and extent of their knowledge regarding current anthropogenic climate change science. Because older generations have more experience and have seen the changes occurring over the years, they should be more informed about climate and should be less impacted by misinformation. This study aims to determine how college students and older generations compare in their level of climate change information, and how their knowledge surrounding the issue affects their purchasing decisions and political decisions. Through a quantitative survey using a convenience sample, respondents will be asked about their knowledge regarding climate change, common misconceptions related to climate change, how climate change affects their purchasing and voting decisions and how they view the media's involvement surrounding climate change. Results from the quantitative survey will be combined with qualitative data from intercept interviews and compared between age groups. This study serves to increase the body of knowledge on how misinformation is shaping college students' understanding of a scientific issue with policy implications. If the upcoming purchasing and voting public is misinformed about climate change and its severity, changes to reduce climate change in public policy and individual behavior are highly unlikely.

**Daniel Belcher**

**Computer Science**

***Short-Range Location Tracking and Applications***

Faculty Mentor(s): Thomas Reichherzer, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

Bluetooth Low Energy (BLE) is a connection protocol used for area-based connection and information sharing. It is a widely used network protocol to communicate between a variety of BLE-enabled electronic devices and receivers that specialize in its packet structures. Many smart phone applications used the technology for advertisements for store locations. We on the other hand, will use it to track the location of objects using a proximity beacon, which is a BLE-enabled device that is attached to objects, to send out a signal to a BLE scanner. This signal will alert the scanner of devices within its vicinity. In this application a BLE scanner can be (almost) any Smart Phone or any computer that can communicate with the BLE protocol with a Bluetooth radio receiver. However, our primary target is to use low cost scanning options, to allow the short-range location sensor to be used in higher-order systems, such as a Smart Home system. There are some issues faced with using the BLE protocol though, such as being able to consistently assess the distance of a beacon from the scanner based on the signal strength. Beacons will output at varying transmission levels, and receivers will show drastically different RSSI values from these beacons based on their internal radios and antenna. Following the goal of resolving this issue, this project aims to evaluate robust methods for detecting the location of objects in a Smart Home using BLE beacons from various providers and using a Raspberry Pi as the beacon scanner.

**Daniel Benson**

**Computer Science**

***Android Adware Detection using Machine Learning***

Faculty Mentor(s): Sikha Bagui, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

Traditional methods of detecting android malware, specifically adware, are becoming increasingly impractical. With the rise of more complex and evasive malware and adware, as well as the sheer numbers of varieties of malware and adware, better methods of detecting malware, specifically adware, are required. And, a prerequisite to determining better methods of detecting adware is a better understanding of the characteristics of the adware families. In this paper we present a methodology for determining the best attributes for classification of each adware family using network traffic samples. Using the CICAndMal2017 dataset, we first perform feature selection using information gain and then perform classification using Machine Learning techniques. Our results present an average classification rate of 68% and average Attack Detection Rate of 62.64% for the adware families. Although this does not appear to be a very high classification rate, it is an improvement over previous works for classification of adware by families. The novelty of this paper is in improving the classification by adware families and identifying the most important attributes for classification by the adware families and for the adware category.

**Martin Kadzis**

**Computer Science**

***Energy Conservation with Prediction Models in Data Transmission***

Faculty Mentor(s): Amitabh Mishra, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

The impact of wireless technology in the healthcare system is exemplified in the form of Wireless Body area Sensor Networks (WBSNs) that deploy small sensors to monitor the conditions of patients by taking their measurements and wirelessly transmit information to a central console for analysis. These sensors are small to ensure wear-ability for the user, but that convenience comes at the cost of limiting the battery size. The longevity of the device depends on the battery, thereby limiting the maximum number of data transmissions possible. Energy demand can be reduced by dynamically selecting data to transmit instead of continual periodicity. This research proposes the use of predictive analysis models to simulate data between each selective transmission to optimize body sensor lifespans. In effort to expand this, a transition of environment from MATLAB to scientific Python was pursued due to the availability of more open source libraries. With the addition of further libraries, it enables the continuation of testing on more predictive analysis models than previously possible. To ensure data fidelity, similar tests of the previous algorithms will be performed in scientific Python to baseline the general likeness or marginal differences of the models when switching between environments. The benchmarking goal of this research expansion is to find a predictive analysis model that best predicts the in-between values of each data transmission with the least error.

**Zachary Mueller****Computer Science*****A Neural Network Model to Identify Relative Movements from Wearable Devices***

Faculty Mentor(s): Caroline John, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

In this paper, we propose a simple neural-network based model to identify and analyze movement based data collected from wearable devices. The base variables used for the analysis include the relative altitude, the accelerometer acceleration, quaternion, the relative motion of gravity, the user acceleration, and the relative gyro rotation in an x, y, and z plane. Based on previous related studies, extensive feature engineering was utilized to generate 171 unique features from those; previously mentioned, which showed a dramatic increase in accuracy. The Label Smoothing Cross Entropy feature was also utilized to make a better generalization of the proposed model. We were able to achieve 95% average on our test data sets which out performed a previous similar work by a good margin of 20%.

**Zachary Mueller****Computer Science*****Affordably Assessing and Comparing Trends in Particulate Matter Concentrations Around a University Campus*****Co-Author(s): Simone Schuster**

Faculty Mentor(s): Amitabh Mishra, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

Air quality in the current age is extremely important to human health, as it is breathed in every day by numerous individuals. As a result, an affordable way for large-scale production of sensors and an accurate way to interpret these readings is necessary. This project involved the construction of inexpensive IoT devices to analyze air pollution, specifically PM 10 and PM 2.5, around the University of West Florida campus. A total of nine devices were constructed using Raspberry Pi Zeros and Honeywell PM sensors to collect both indoor and outdoor PM data in chosen areas around campus that have the high foot traffic in and out of buildings. We chose to focus our analysis at a smaller-scale as most studies that examine PM 10 and PM 2.5 are usually done in areas with known high dust pollution or large populations, and those studies also require expensive equipment. Data collection is in its infancy, however, we expect to see recognizable trends in the fluctuation of air pollution during periods of frequent building usage. We also plan to build an efficient method of sending the data to a base system and running neural network analysis to predict how the next months and years will look like.

**Jason Simonds****Computer Science*****Classifying UNSW-NB15 Network Traffic in the Big Data Framework using Random Forest in Spark***

Co-Author(s): Russell Plenkers, Timothy Bennett, Subhash Bagui

Faculty Mentor(s): Sikha Bagui, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

The focus of this work is on detecting and classifying attacks in network traffic using a binary as well as multi-class machine learning classifier, Random Forest, in a distributed Big Data environment using Apache Spark. We test our classifier

using the UNSW-NB15 dataset. Major problems in these types of datasets include high dimensionality and imbalanced data. To address the issue of high dimensionality, Principal Components Analysis was applied before using Random Forest. Binary as well as multi-class Random Forest classifiers were compared in a distributed environment, with various number of cores, in terms of accuracy, false alarm rate, misclassification rate, with respect to the number of trees, processing time, and various k values with and without PCA and other pre-processing.

**Barry Sly-Delgado****Computer Science*****Modeling Suicide Risk using Big Data***

Faculty Mentor(s): Ashok Srinivasan, Computer Science

Lead Author Department: Computer Science

Session: Main Poster Session

This research presents a methodology to model the risk of suicide at the county level by leveraging novel data streams. We identify combinations of risk factors that explain relative suicide risks in different counties. The suicide rate in the United States has increased by 33% from 1997 to 2017, making this work timely and significant. Those high at risk of suicide include veterans, whose suicide rate is 26% greater than the general population, which makes this work particularly relevant to the Pensacola region. Access to new data streams, such as location-based services, gives us the ability to estimate the number of users who exhibit risk factors that are difficult to obtain through conventional means. Location-based services data provide detailed human movement information acquired from mobile applications. Google Places API can be used to derive the types of places visited. We can then relate these to suicide risk factors available in the literature to see if differences in the fractions of high-risk individuals explain differences in suicide rates in different counties. To validate the potential of this approach, we apply it to data from certain rural counties in Florida that are demographically similar and geographically close but have a wide range of suicide rates. Our results show that certain combinations of risk factors correlate strongly with a county's suicide rate. Further research in this direction could yield results that enable targeted interventions to prevent suicides.

**EARTH & ENVIRONMENTAL SCIENCES****Reilly Allman****Earth and Environmental Sciences*****Critical Physical Geography: An Updated Literature Review***

Faculty Mentor(s): Kwame Owusu-Daaku, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Critical Physical Geography (CPG) is an integrative approach to geography which intentionally melds physical and critical human geography. However, CPG is an important area of science that has been under-researched. CPG advances two themes: a more critical physical geography that looks at the physical processes of geography and relates them to the social or political influences on that process and more physical critical geography takes social and political processes and shows the relation of such processes to the physical processes that are causing these socio-political issues. This literature review updates an initial literature review performed last year to include the Palgrave Handbook of Critical Physical Geography which is a seminal text in the CPG literature. The inclusion of the handbook to the review



is essential to increase the number of references due to the dearth of information in more physical critical geography. By reviewing this material, and beginning to classify the information as more physical critical or more critical physical, we can then give specific examples of how a more physical critical geography could positively impact instances like the Akosombo dam in the Volta River Delta in Ghana that is causing serious erosion downdrift. Understanding how a more physical critical geography would effect these areas if implemented properly could lead to a more intentional process being put forth to prevent negative results.

**Victorina Arvelo** **Earth and Environmental Sciences**  
***The Relationship between Human Adaptation Strategies to Climate Change and Species Conservation***

Faculty Mentor(s): Kwame Owusu-Daaku, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

Rising ocean levels and erosion threaten many coastal developments, which has great economic implications and often creates a unique need to combine coastal management strategies with ecosystem conservation practices. Historically, ecological systems have naturally adapted and shifted under environmental pressures. These changes are now accelerated due to anthropogenic impacts, which gives rise to the challenge of determining to what extent would communities of all species be able to adapt on their own, and to or in which areas, or how much of each system, to preserve. Coastal and marine ecosystems present a unique challenge due to sea level rise as a result of ocean warming and water expansion. Coastal areas are often well developed and/or of value to human communities for their resources, but issues like erosion are extremely widespread impacting as many as 70% of all coastal environments. These vulnerable areas also tend to be of great ecological importance for many organisms, leading to a need for the establishment of species conservation practices. Our study attempts to describe the relationship between human adaptation strategies and biological conservation in response to climate change effects, and analyze the ways in which they overlap and interact with each other, by way of a literature review. The goal of this literature review is to feed into future research that will examine this relationship by way of a case study.

**Elizabeth Barrett** **Earth and Environmental Sciences**  
***The Haunting Truth: Crime Mapping Around Cemeteries in New Orleans, Louisiana***

**Co-Author(s): Derek Morgan**  
 Faculty Mentor(s): Allysha Winburn, Anthropology  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Oral Presentation Session

Cemeteries have often been considered a place of historical significance. They can tell us much about the cities that surround them, including the ways in which that city pays homage to its decedents. For many, cemeteries are a place of respect and serenity where they can visit their loved ones one more time. This is often the reason that tourists as well as relatives feel safe to visit the cemeteries often. But, is this really the case in every cemetery? How safe are each visitor to historical cemeteries? This study was conducted by reviewing the crime within a half mile radius around several New Orleans, Louisiana cemeteries in the Fall of

2019. First, there was a period of observation, where researchers spent an hour in each space to observe the activities in and around the space. Afterwards, data from the City of New Orleans' open data portal was geo-coded to see what types of crime was most prevalent in this buffer zone. From there, analysis could then be drawn about the space and which types of crime were most common in the cemeteries. This research will allow the public to be informed of the potential crime they should be on the lookout for when visiting these spaces in New Orleans. Are you ready to hear the haunting truth?

**Zackary Black** **Earth and Environmental Sciences**  
***Analyses of Air Mass Rapid Drought Cessation Events in the Southwestern United States***

Faculty Mentor(s): Emily Harris, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

Drought is a regular climatic feature of the southwestern region of the United States (US). Droughts in this region persist for months to years, leading to potentially severe economic losses and dangers to public health. The arid environment of the southwest US supports drought conditions, with fewer, but more intense episodes of precipitation the primary relief. Occasionally, these storms are intense enough that droughts lasting over a year, end within five days or less. These events are known as Rapid Drought Cessation Events (RDCEs). RDCEs can be caused by frontal systems, air masses, or tropical storms. Air masses, in particular, are a major source of precipitation for the southwest. This research uses precipitation data from the National Oceanic and Atmospheric Administration (NOAA's) Center for Environmental Information to determine air mass RDCEs and associated spatiotemporal trends. This research will also examine the teleconnections between these RDCEs and three ocean-atmosphere oscillations: The Pacific Decadal Oscillation, the Atlantic Multidecadal Oscillation, and the Oceanic Niño Index. Analyzing these correlations will illustrate recurring trends of RDCE occurrence for a greater understanding of the climate of the southwestern region of the US, and have applicable uses in water resource management. Accurate prediction of occurring RDCEs would aid policymakers' ability to protect public safety and protect important economic assets, such as crops, from the dangers of flooding and drought.

**Emily Fisher** **Earth and Environmental Sciences**  
***A Walkability Study to inform EV Charging Stations: A University Campus Study***

Faculty Mentor(s): John Morgan, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Oral Presentation Session

Due to a sudden spike in electric vehicle (EV) utilization on university campuses, the objective of this project is to determine where to place EV charging stations in the most optimal locations and to support a mobile application that will be used as a guide to help commuters. Using research on walkability has led to the use of cognitive mapping. Using the cognitive map of University of West Florida's campus in a survey will help show what building and what parking lot are the most frequented on the campus. Students and faculty will be asked to show how they travel to and from the building to their preferred parking lot. Using the data from the surveys helps indicate where the campus population is parking

in relation to the buildings they frequent. ArcGIS is used to digitize the surveys and show the frequency of parking lots to buildings. This project is a part of a larger team effort to inform a mobile application where EV charging stations are located on campus. The purpose of this project is to help place these charging stations in the most efficient way possible on campus.

**Cody Goins** **Earth and Environmental Sciences**  
***Geospatial Analysis of 1949-2018 Oscillations in Rainfall Patterns in the Gulf Coast: Impacts for Climatological Modeling***

Faculty Mentor(s): Jason Ortegren, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Oscillations in springtime (April and May) rainfall between the years 1949 and 2018 were observed at the Pensacola International Airport weather station. Our goals were two-fold: 1) identify other stations that exhibited similar patterns as Pensacola International Airport in order to determine the geographical extent of this oscillation, and 2) find and model factors that are believed to affect these observations. The first step was to examine the oscillation observed at Pensacola International Airport (PNS). Trend-lines and seasonal indices were used to characterize the data. These were then compared with data from 37 other stations spread throughout the southeast. Comparison of trend-lines showed that 15 stations, including PNS, exhibited positive trends in rainfall. Coefficients of variation were also used to compare the station data. These comparisons show that stations along the Gulf Coast exhibited similar patterns in rainfall from 1949-2018. A principal components analysis (PCA) was performed in order to regionalize the data. To determine the factors that caused these observations, a thorough literature review was performed. Our research suggests that this oscillation extends further into the southeastern US, mainly along the Gulf Coast. Our research also suggests that, although there are several influences, the main cause of these oscillations observed is the Bermuda High Index. These findings are important due to the implications rainfall patterns can have for industries such as agriculture and tourism. Identifying and understanding these oscillations could be important to increasing our ability to predict rainfall patterns. Being able to predict these patterns could also allow

**Lindsay Gutting** **Earth and Environmental Sciences**  
***Comparative Analysis of Consumer vs. Research Grade Unmanned Aerial Vehicle***

Faculty Mentor(s): Phillip Schmutz, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Unmanned Aerial Vehicle (UAV) research technology is constantly evolving as new operative changes and documentative elements associated with these technologies continue to progress. Strategic analysis of these enhancements at all prices would prove to be universally beneficial among the scientific community in order to understand the ideal roles and cost-effective uses of various UAV models. This study is designed to assess the capability of inexpensive UAVs to collect research grade quality data. More specifically, this project will compare the differences between constructed Digital Elevation Models (DEMs), created using Agisoft Metashape. Three different UAV systems

were tested, two inexpensive or consumer grade models, the DJI Mavic Air and the DJI Spark, and one research grade, the DJI Phantom 4 Pro. Ultimately, we seek to answer the question: can a less expensive UAV produce statically comparable data to a research grade UAV? UAV flights were flown at an altitude of 100m over a 4 hectare area at the University of West Florida beach property located in Pensacola Beach, Florida. Statistical analysis is currently ongoing, yet preliminary data suggests that lower quality UAVs are capable of producing similar DEMs as the research-grade UAV. Only some minute terrain features were not detected by the consumer grade UAVs. Results from the study support the utilization of consumer-grade UAVs for teaching applications, pilot research studies, or affordable land assessment without substantial data loss. Finally, this study offers support to the development of more affordable research and education programs focused on the use inexpensive UAVs.

**Jilin Hu** **Earth and Environmental Sciences**  
***Deep Learning for Environmental Niche Modeling of the Cold-Water Coral *Lophelia Pertusa* in the Gulf of Mexico***

Faculty Mentor(s): Zhiyong Hu, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Marine ecosystems are suffering from climate change, ocean acidification, and overfishing. Cold-water coral ecosystems are vulnerable to these threats and slow to recover. In the NOAA coral database for the Gulf of Mexico (GoM), *L. pertusa* is the dominant species. However, the full geographic extent of *L. pertusa* is far from known. Hence, knowledge of their distribution is critical to assessing impacts from fisheries and environmental change and is useful for conservation management plans. This project presents environmental niche modeling of *L. pertusa* in the GoM. First, spatial point pattern analyses were performed to explore the association of observed pattern of *L. pertusa* with covariates. Next, an optimal deep neural network model was used to train the presence-absence-covariates data for the whole and the east half of the study area separately. Both models were used to predict the probability of presence for the whole region. Threshold values that maximize the sum of sensitivity and specificity were used to classify the probability maps into presence and absence maps. Model performances were assessed using the reserved test data and Area Under Curve (AUCs) of receiver, operating characteristics (ROC) were used to assess the model performances. Finally, this study will also conduct three scenario analyses using the full model to predict the effect of environmental and climate change on the distribution of *L. pertusa* across the GoM.

**Linda Ivey** **Earth and Environmental Sciences**  
***An Assessment of Microplastic Presence and Knowledge Along the Northwest Florida Gulf Coast***

**Co-Author(s):** **Aleigh Rowe**

Faculty Mentor(s): Kwame Owusu-Daaku, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

As microplastics become a more prevalent topic in the scientific community, we aimed to raise the same amount of awareness and concern to the general public. One effective way to do so was through the food on people's plates. The Florida

Gulf Coast is heavily dependent on seafood. With the increasing amount of microplastics being found in our local waterways, this raises questions as to how much of that plastic is concentrated in the fish and shellfish we consume. We hope by presenting our data and research in a clear and understandable manner that the comprehension of microplastics and the threats of plastics will be more accessible to the public - the primary initiators of change. A principal objective of our research was to survey local seafood consumers to obtain knowledge on the public's basic awareness of the issue. For this study, we analyzed microplastic concentrations in fish from local/regional markets from seven cities along the Gulf Coast, including the Pensacola Metropolitan area. To help prevent aquatic ecosystems and our own diets from being flooded with microplastics, we explored these microscopic pieces of increasingly massive proportions at the source. Our goal is to gain a better understanding of the microplastic problem locally, bring attention to this growing issue while contributing to existing statewide efforts such as the Florida Microplastics Awareness Project, and ultimately increase awareness of the microplastic problem along the Gulf Coast.

**Yutong Liu** **Earth and Environmental Sciences**  
***Hydrological Response to Land-use and Land-cover Change Based on SWAT Model in Escambia River basin***

Faculty Mentor(s): Zhiyong Hu, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

Since the 20th century, economic development has caused major changes in land use patterns around the world, changed the original conditions of production and convergence in the region, and directly affected the region's water resources. This research on hydrological response caused by land-use change has become a hotspot in world water resources research. This paper intends to select the Escambia watershed in southern Florida as the research object, applies the SWAT model and combines remote sensing technology and geographic information system technology to study the hydrological response under different land-use conditions. This study analyzes the characteristics of river basin climate and land change in the past 50 years by collecting and sorting meteorological, hydrological, and land use/cover change data over the past 50 years. This study constructs various data regarding hydrometeorology, land use, vegetation cover, and soil types, establishes the Escambia River Basin database and performs model parameter calibration with the use of the SWAT model. Finally, a specific land use plan was assumed to analyze the hydrological response to land-use changes. The conclusions of this study will reflect the extent to which the hydrological environment is affected by land-use changes. It helps to understand the spatiotemporal distribution and impact mechanism of the runoff process in the basin and can provide references for future policy formulation and management schemes.

**April Mendez** **Earth and Environmental Sciences**  
***Comparison of Various Unmanned Aerial Vehicle Structure from Motion Software***

**Co-Author(s): Lindsay Gutting, Kirt Wilson, Samantha Seals**  
 Faculty Mentor(s): Phillip Schmutz, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

The use of Unmanned Aerial Vehicle (UAV) technology to gather, construct, and evaluate geomorphic landscapes has increased substantially in recent years and become a major component of the discipline. This explosion has led to a variety of Structure from Motion (SfM) data analysis software packages, however, little research has been conducted analyzing the differences or similarities between their data output. Accordingly, the purpose of the research is to compare and contrast the Digital Elevation Models (DEMs) constructed from three different SfM software packages – Pix4d, ArcGIS Pro, and Agisoft – using a single UAV flight. Overall, this project provides significance to present and future scientific research by providing a comparison of alternative SfM data analysis tools. The UAV flight was flown at an altitude of 100m over a 4-hectare area at the University of West Florida beach property located in Pensacola Beach, Florida. Statistical analysis is currently ongoing, yet preliminary data suggests that there is a difference between the DEM models produced from the software packages. Due to the different software interfaces and model construction processes, there is no certainty the models will run under the same specifications therefore, the products vary.

**Anna Powell** **Earth and Environmental Sciences**  
***Soil Health Variability and Edge Effects between Agricultural and Forested Land Uses***

Faculty Mentor(s): Johan Liebens, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

Soil health is the capacity of soil to sustain biological life, which is crucial to maintaining ecosystem health. The world's exponentially growing population increasingly relies on arable lands to sustain food supply, clothing, and shelter materials. The extraction of these resources degrades the health of the soil. The objective of this study is to investigate how soil health varies spatially between agricultural and forested land uses. This study focused on two sampling transects, each situated across the edge of the forest and an agricultural field. For each site, the center point between land uses was marked and sampled. From this center point, samples were taken every 10 meters for 60 meters into both the agricultural field and the forest. The samples were collected from the top 10 centimeters and analyzed using USDA and FDEP standard procedures for soil health indicators: particle size, aggregate stability, bulk density, total organic carbon, biological respiration, and pH. The data shows larger particle sizes in the 10th percentile for the forested land use, as well as greater variability between the forest samples. The data also shows that pH increases towards the edge of the field and then decreases and stabilizes for the forest samples. Aggregate stability, bulk density, total organic carbon, and biological respiration will also indicate the effects of land use change on soil health and how these indicators change spatially between land uses and near their edge. The results of this study will reinforce the importance of agricultural land management for soil resources.

**Timothy Roberts** **Earth and Environmental Sciences**  
***Qualitative Study of Climate Change Adaptations in the Volta River Delta of Ghana***

Faculty Mentor(s): Kwame Owusu-Daaku, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

River deltas represent the complex culmination of ecological and anthropogenic interactions. These interactions are best represented in the global frame of climate change, as numerous issues have been highlighted in deltaic regions in previous years. This phenomenon has been well researched in terms of the biophysical impacts of climate change on deltas. However, there has not been equitable research regarding the ways in which the vulnerability of residents of deltaic regions is framed by the various stakeholders of deltas. The Volta River Delta (VRD) of Ghana is an ideal region to conduct this study due to both the clear effects of climate change present there and the fact that it is a managed river system dependent on an upstream dam. In response to these impacts, the Government of Ghana constructed coastal protection infrastructure known as Sea Defense Systems (SDS). However, less attention has been paid to the ways in which the VRD residents frame their major concerns. This research will present the results of a survey of residents of the VRD between 2015 and 2016 on their major challenges living in the region and their thoughts on the SDS. The survey results will also be disaggregated by gender, age, and occupation to see what groups of people possessed what challenges. The findings of the survey can improve understandings of what residents of the VRD need and want to live productive lives. Such understandings can influence future climate adaptation measures that focus on sustainability and health of coastal populations globally.

**Domani Turner-Ward** **Earth and Environmental Sciences**  
**Analyzing Porewater Nutrients at the Naval Live Oaks Preservation Area**

Faculty Mentor(s): Matthew Schwartz, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

We are assessing temporal variability of dissolved nutrients in porewater from a nearshore seagrass bed in Pensacola Bay System (FL, USA). The sampling site is located at the Gulf Islands National Seashore: Naval Live Oaks Preservation Area. This is a site of other previous and ongoing SGD and porewater nutrient studies. This sample location has been identified as an area where submarine groundwater discharge (SGD) does not occur; in other words, our data indicate the groundwater that carries nutrients, pollutants, and freshwater does not enter the coastal water at this site. This site was sampled using miniature piezometers on a day which was preceded by drought but during which was rain. Additionally, the measured shoreline was significantly lower than usual. Porewater from a single shore-normal transect site was sampled at depths of 8, 25, 50, 75, 100, 125, 150 cm below the sediment surface and distances of 0, 15, and 30.5 meters from the shoreline, and tested for dissolved ammonium, nitrate, nitrite, and phosphate. The porewater data collected allow us to create visual models of the nutrient concentration levels, which are compared to previous studies of the same location to explore the potential significance of local precipitation events and unusually low shoreline. Additionally, these visual models reflect more detail and precision than previous studies by incorporating samples from more frequent depths. These things will be used to better understand the local hydrogeological controls on porewater nutrients in a seagrass site.

**Cameron Wakeland** **Earth and Environmental Sciences**  
**Living in a Liminal Place: The Case of Totope in the Volta River Delta of Ghana**

Faculty Mentor(s): Kwame Owusu-Daaku, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

This study uses qualitative interviews and focus groups to examine everyday life in Totope, a small rural fishing village in the West African country of Ghana. This village is situated on a marginal piece of land surrounded by the Gulf of Guinea to the south and the Songhor lagoon to the north. Totope exhibits a unique combination of characteristics, including its geography, local sea level rise, coastal erosion, socio-political marginalization and more. Drawing on interviews with residents of the village, this research seeks to highlight the ways in which the people of Totope have been marginalized, both directly and indirectly. A critical framework built around the concept of liminality will be used to analyze interview data. This framework explores the condition of being in-between, in limbo, or in transition. This concept has proven to be a useful tool to better understand life in Totope as it pertains to topics like human migration, climate change, and coastal morphology.

**Huiyin Wan** **Earth and Environmental Sciences**  
**Study on Soil Erosion in Xinfeng River Watershed with RUSLE**

Faculty Mentor(s): Zhiyong Hu, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Soil erosion is becoming one of the widespread and severe environmental issues in recent years. It can directly lead to reduced agricultural productivity, land degradation and water pollution as well. Xinfeng River Watershed, located in the Guangdong Province, China, is a drinking water conservation area and an important cultivated area, which has a great influence on drinking water safety in Hong Kong and Guangdong Province. Study on soil erosion in Xinfeng River Watershed helps to gain a clear understanding of the current water pollution situation and how human activities affect the water environment. The aim of this study is to calculate the amount of soil erosion with the integration of GIS and RUSLE model, analyze its spatial-temporal distribution as well as the relationship between land use and land cover change (LUCC) and soil loss, and thus, put forward some advice on the control of soil erosion in Xinfeng River Watershed.

**Nathaniel Winn** **Earth and Environmental Sciences**  
**Observation of Tidal Influence on Porewater Nutrients In A Submarine Groundwater Discharge Zone**

Faculty Mentor(s): Matthew Schwartz, Earth and Environmental Sciences

Lead Author Department: Earth and Environmental Sciences

Session: Main Poster Session

Submarine groundwater discharge (SGD) is the process by which fresh or brackish groundwater moves through porous sediments to the surface water. SGD is a method of transportation for different nutrients, metals, pollutants, and freshwater to enter our coastal waters. Tidal pumping and sub-surface hydraulic pressure are the key driving forces that move groundwater through the land-sea interface. At high tide, porewater in the subterranean estuary is predicted to have a low concentration of nutrients due to seawater recirculation. During the



ebb tide, the nutrient concentration will increase as it reaches the next high tide. The objective of this study is to observe how porewater nutrient concentrations are impacted by tides at an SGD positive zone. The area of study is located at the Gulf Islands Nation Seashore: Naval Live Oaks Preservation Area in Santa Rosa County, Florida. The area of interest ranges from the shoreline to about 30 meters offshore in Santa Rosa Sound. Piezometers are inserted into the sediment on the seafloor at different depths to extract groundwater. The data shows high nutrient levels are present in the subterranean estuary. The results are displayed using a contour plot to track the movement of the nutrient through a tidal cycle. The nutrient concentrations appear to have spatial variability but are showing changes as the tidal cycle progresses. Collecting evidence of nutrients moving through a subterranean estuary and interacting with the SGD interface can provide a better understanding of tidal pumping and the impacts that it can have on an ecosystem.

**Xu Xu** **Earth and Environmental Sciences**  
***The Home Range Analysis and Habitat Land Use during the Migration of Endangered Oriental White storks (Ciconia boyciana)***

Faculty Mentor(s): Zhiyong Hu, Earth and Environmental Sciences  
 Lead Author Department: Earth and Environmental Sciences  
 Session: Main Poster Session

Land-use change and wetland degrade resulting in habitat loss and species displace, especially for water birds. Home range sizes and habitat use have the benefit of behavioral analyses and subsequent conservation strategies. Here, we conducted a study to assess the home range sizes and habitat land use of endangered oriental white storks (*Ciconia boyciana*). Four oriental white stork nestlings from 3 different nests were tracked by miniaturized multi-sensor satellite transmitters (PPTs) from July to October in 2016. The home range of four nestlings was estimation according to kernel density estimation with home range extension software. We analyze the variation in home range size and habitat land use across the different individuals and different regions. Our results show that home range sizes were considerably larger in the post-fledging period than in the nestling period. Individual also show significant variation in home range size. This species prefers marsh wetland and paddy fields to inhabit. As conservation strategy guidelines, we recommend the reclamation cropland back to the wetland and the creation of small marsh at the lowland.

## ELECTRICAL & COMPUTER ENGINEERING

**Khoi Chu** **Electrical and Computer Engineering**  
***Design and Implementation of a Real-Time Energy Monitoring and Reporting System***

**Co-Author(s): Savanna New, Hannah Nano, Jarrad Havemann, Zian Wang, Mitchell Posey, Ernie Hogan, Devin McCormick**

Faculty Mentor(s): Bhuvanewari Ramachandran, Electrical and Computer Engineering  
 Lead Author Department: Electrical and Computer Engineering  
 Session: Main Poster Session

Real-time energy monitoring is a way of monitoring energy consumption and quality of power within a building or a network of buildings. It provides a more

efficient approach to using energy by making informed decisions based on data that has been collected in the past and predicting future trends. In this project, we developed a Real-Time Energy Monitoring and Reporting Tool for the Hal Marcus College of Science and Engineering building of the University of West Florida (UWF). This project is a culmination of work done by two Capstone Project teams, with one team working on the hardware configuration of the project for recording the data in a database and the other working on the software interface for viewing, monitoring and reporting the data. This project allows the University to track energy consumption and power quality in real time, review historical data, and find patterns that can be used to regulate energy usage and power quality. The visualization and reporting software has been written in Python, has a MYSQL database, and is used in conjunction with a separately developed hardware interface. The software is embedded in a hardware interface that uses IoT connected sensors to measure data from UWF Buildings. Data such as voltage, current, power, frequency, etc. is collected from the sensors and stored in a database. The software developed in this project is used to display the data in user defined graphical and tabular outputs.

**Carolyn Henry** **Electrical and Computer Engineering**  
***Applying a Verified Trusted Computing Base to Cyber Protect a Vulnerable Traffic Control Cyber Physical System***

**Co-Author(s): Stephen Hopkins**

Faculty Mentor(s): Sikha Bagui, Computer Science  
 Lead Author Department: Electrical and Computer Engineering  
 Session: Main Poster Session

This research proposes to define the requirements of a traffic control system, establish a security policy, develop a trusted computing base (TCB), identify and design attacks on a traffic control system, and implement controls in the TCB. Traffic control systems were developed with operational performance, reliability, and safety in mind, designed well before the integration of advanced communication; technology. Today, attackers compromise traffic system operations by taking advantage of this communication technology, including radiofrequency (RF), internet and cellular transmissions. Under the goals of the Secure SCADA Framework, implementing a TCB in the traffic control cyber-physical system will increase cyber resilience while maintaining operational performance, reliability, and safety. A working traffic signal system will be developed and constructed. The TCB development will design, build, and verify a core set of hardware, software, and firmware which will operate in conjunction to establishing a high level of security protecting the traffic control system. A preliminary set of cyber-attacks will be made against the traffic system. The TCB will then be implemented and the traffic control system will be re-attacked. The result will be increased cyber-resilience. The system will be verified using standards established by the Department of Defense and the International Standards Organization – specifically, the DoD Trusted Computer System Evaluation Criteria and the ISO Evaluation Criteria for IT Security. This type of verification confirms the validity of the design versus standards well established over the past decades. The design will be extended to accommodate encrypted communications channels providing even more security.

**Jackson Hoffer** **Electrical and Computer Engineering**

**Educational Review: GPS Applications and Vulnerability Implication**

**Co-Author(s): Peter Kresuer, Rafael de Sa Lowande**

Faculty Mentor(s): Tarek Youssef, Electrical and Computer Engineering

Lead Author Department: Electrical and Computer Engineering

Session: Main Poster Session

The Global Positioning System (GPS) is utilized within various applications of society prevalent in the automotive, power, and even the financial industries. However, the vulnerabilities of the GPS signal should be brought to attention as national infrastructure becomes more dependent on these signals. They in turn will become more susceptible to attacks and illicit tampering. Phasor Measuring Units are one example of a vulnerable piece of equipment used in the power industry. These devices rely on precise timing signals, and any jamming or spoofing attack on these systems could cause significant measurement errors in a power system. However, there are steps that can be taken to prevent and defend against attacks in both future and existing systems.

**Arthur Menezes** **Electrical and Computer Engineering**

**Spring 2020 NASA Rover Base**

**Co-Author(s): Peter Kreuser, Garret Murcko, Rafael de Sa Lowande**

Faculty Mentor(s): Sam Russel, Electrical and Computer Engineering

Lead Author Department: Electrical and Computer Engineering

Session: Main Oral Presentation Session

Every year, NASA holds a competition to determine the best mining robot built by students which can successfully navigate sandy terrain, dig up sand and gravel samples, and then deposit the gravel samples in a Collector bin. This year, our capstone group will be building the prototype to compete in the upcoming competition. This team is split into two different capstone teams. Our team will build the base, fabricate the wheels, connect all the electrical components, and program the rover to wirelessly move, turn, dig and deposit its contents. We will be building an aluminum base that will consist of a one inch by two inch rectangular square tube frame, four recycled motors, and four 3D printed wheels. The final wheel design will be printed using PLO+ it has six grousers because, after some testing, we found that this number of grousers will allow for increased strength and wheel rigidity, and it will have 12 spikes minimize slippage while moving in sand. The base module power system will consist of two 12V lithium polymer (LiPo) batteries. To isolate the power source from the system in the event of unexpected operation, a 12V circuit limiting relay is installed that implements the manual shut-off circuit and also controls the motors. All of this will be controlled wirelessly using a pocket PC connected to an Arduino.

**Christian Rosa** **Electrical and Computer Engineering**

**Identification of Electric Vehicle Charging Stations using an Optimum Energy Consumption Approach**

Faculty Mentor(s): Bhuvaneshwari Ramachandran, Electrical and Computer Engineering

Lead Author Department: Electrical and Computer Engineering

Session: Main Poster Session

An Electric Vehicle (EV) is a proven solution by car manufacturers to steadily replace the conventional vehicle with a more environmentally friendly option

that will reduce our dependence on nonrenewable energies. One drawback is that an EV may take many hours to reach a full charge. Reducing the charging times for EV's are one of the leading challenges for promoting this type of vehicle. Also, the introduction of EV's into the power grid increases flow in the distribution network and as a result increases power flow congestion. Traffic conditions also play a key role in affecting EV battery consumption. Disturbed traffic conditions will result in increased energy consumption of the EV battery and negatively affect the overall performance of EV's. In this research, the problem of scheduling EV battery charging and the assignment of EV's to a charging station (CS) will be solved using a simulated annealing optimization method. This will be formulated as an optimization problem and the assignment of EV's to CS's will satisfy predetermined constraints related to CS's restrictions, the EV conditions, traffic conditions, etc. The proposed approach will be demonstrated using two different scenarios of the system, one where the EVs have homogeneous components and second, where the EVs have heterogeneous components. From the results, it will be proven that the optimal assignment of an EV occurs when the state of charge (SoC) of the EV battery remains at its highest possible percentage when arriving at the CS. Keeping the battery SoC at a high percentage

**Hannah Wooten** **Electrical and Computer Engineering**

**An Innovative Deep Learning Approach Applied to Transient Stability Assessment of Power Systems**

**Co-Author(s): Stephen Harris**

Faculty Mentor(s): Bhuvaneshwari Ramachandran, Electrical and Computer Engineering

Lead Author Department: Electrical and Computer Engineering

Session: Main Oral Presentation Session

Transient stability assessment (TSA) is a crucial issue for secure and reliable operation of a power system. Due to the heavy volume of data collected from transient stability studies, recently data mining and machine learning techniques have been widely applied to TSA. After suffering from large disturbances such as short-circuit faults, cut-off loads, etc., it is necessary to quickly assess whether the power system is stable. Traditional transient stability assessment methods include time domain simulation, direct method, and extended area method. However, these methods do not fully meet the needs of calculation accuracy, speed and capacity, and are difficult to apply to online calculations. In this paper, an innovative deep learning method is applied for TSA. The proposed approach is tested on a 19-bus system. Simulation results illustrate the effectiveness and practicability of the proposed strategy.

## INFORMATION TECHNOLOGY

**Dallas Snider** **Information Technology**

**Security, Privacy and Energy Management in the Internet of Things**

Faculty Mentor(s): Dallas Snider, Information Technology

Lead Author Department: Information Technology

Session: Main Poster Session

The Internet of Things (IoT) is the collection of the billions of devices that collect

and transmit data throughout the world. Securing and managing these devices along with the data they use, store and move is no easy task. To accomplish these tasks, IoT management systems require standardized communication, scalability, and context awareness. The most dangerous part of IoT is that people are losing their privacy without realizing it because they are unaware of the data that is being collected and how it is being used. One of the design tradeoffs in the design of wireless Internet of Things devices is maximizing battery life at the expense of data confidentiality, integrity and availability. This project aims to answer the questions of how security, privacy and energy management relate to each other, and how to improve security without sacrificing device performance.

## MATHEMATICS & STATISTICS

**Max Buchanan**

**Mathematics and Statistics**

### ***Pythagorean Triples and the Groups Associated with Them***

Faculty Mentor(s): Rohan Hemasinha, Mathematics and Statistics

Lead Author Department: Mathematics and Statistics

Session: Main Oral Presentation Session

A Pythagorean triple is a set of three integers,  $x$ ,  $y$ , and  $z$ , that satisfy the Pythagorean condition, or  $x^2 + y^2 = z^2$ . A primitive Pythagorean triple is a Pythagorean triple in which the only common factor of all three integers is 1. Our goal in this paper is to describe and examine the properties of the  $3 \times 3$  integer matrices that map primitive Pythagorean triples to primitive Pythagorean triples. We use group theory as a tool for this as it provides an elegant, useful, and unifying framework for our main objective described above. We show that the set of such  $3 \times 3$  matrices forms a group  $G$ . We also examine the set  $H$  of  $2 \times 2$  integer matrices that map relatively prime pairs to relatively prime pairs since it is closely related to  $G$ . We will discuss the isomorphic nature of these two groups and look into generating sets of matrices for each group. For  $G$ , these generating sets will help to construct a ternary tree with a well defined structure that includes every primitive Pythagorean triple.

**Hailee Hawkins**

**Mathematics and Statistics**

### ***Citizen Science Project of Analyzing Micro-plastics in Local Waterways and Invertebrates***

**Co-Author(s): Kara Montgomery, Alexis Janosik, Edward Bauer, Kwame Owusu-Daaku, Emmanuel Oduro Nayakro**

Faculty Mentor(s): John Pecore, Teacher Education and Educational Leadership

Lead Author Department: Mathematics and Statistics

Session: Main Poster Session

Instructor led learning has been documented as less impactful than student directed project -based learning (PBL). PBL is an instructional method that engages students in knowledge acquisition and skill development through an extended inquiry process structured around an authentic problem with purposeful activities and products. One way to engage students in PBL is through citizen science projects where students participate in collecting and analyzing scientific data for an authentic research project. A citizen science PBL helps students connect classroom experience and content to real world problems and analysis of those problems. The microplastics citizen science PBL asks students to investigate the socio-environmental issue of microplastics. Five

high school students enrolled in a marine science course chose to participate in the microplastics citizen science PBL. The students were asked to research microplastics, review and modify as necessary the data collection protocol, collect and analyze water samples for microplastics in local waterways, upload the data into the national database, and evaluate the results and generate conclusions. Using a single case study approach, researchers collected observational data and conducted participant interviews to explore student's experiences of engaging in a student led citizen science PBL endeavor. Student directed citizen science PBL enables students to be scientists by engaging in authentic science that contributes to researching a local socio-environmental problem.

**Kunqi Li**

**Mathematics and Statistics**

### ***Resampling Imbalanced Data for Network Intrusion Detection Datasets***

Faculty Mentor(s): Sikha Bagui, Computer Science

Lead Author Department: Mathematics and Statistics

Session: Main Oral Presentation Session

Cybersecurity is increasingly becoming a major concern due to the increased reliance on computers and the Internet. In order to prevent Cyber attacks, we have to be able to build efficient Network Intrusion Detection Systems, and the basis for this is to be able to analyze Cybersecurity data efficiently and quickly. But there is an inherent problem with most Cybersecurity data —the data is highly imbalanced, that is, there is a disproportionately large amount of good or normal traffic data and in a most cases, very few attack instances. Moreover, many of these datasets require multi-class classification. Even existing benchmark datasets suffer from this problem. Using imbalanced data for machine learning or deep learning algorithms like Artificial Neural Networks (ANN) is a major challenge. To address this problem, we suggest resampling the data. Resampling includes oversampling and undersampling. For oversampling, we create more points of the minority data to compensate for the imbalance. For undersampling, we reduce the points of the majority data to compensate for the imbalance. And, in this paper, we compare four resampling methods, random undersampling, random oversampling, Synthetic Minority Oversampling Technique (SMOTE), Adaptive Synthetic Sampling Method (ADASYN) on three benchmark Cybersecurity datasets, KDD 1999, UNSW-NB15 and UNSW-NB17, using Artificial Neural Networks (ANN). We evaluate the results using unweighted measures including precision, recall and the F-1 score. We also compare the training time the algorithm, which is often the major part of the total running time.

**Kunqi Li**

**Mathematics and Statistics**

### ***Resampling Imbalanced Data for Network Intrusion Detection Datasets***

Faculty Mentor(s): Sikha Bagui, Computer Science

Lead Author Department: Mathematics and Statistics

Session: Main Poster Session

Cybersecurity is increasingly becoming a major concern due to the increased reliance on computers and the Internet. In order to prevent Cyber attacks, we have to be able to build efficient Network Intrusion Detection Systems, and the basis for this is to be able to analyze Cybersecurity data efficiently and quickly. But there is an inherent problem with most Cybersecurity data —the data is highly imbalanced, that is, there is a disproportionately large amount of good or normal traffic data and in a most cases, very few attack instances.

Moreover, many of these datasets require multi-class classification. Even existing benchmark datasets suffer from this problem. Using imbalanced data for machine learning or deep learning algorithms like Artificial Neural Networks (ANN) is a major challenge. To address this problem, we suggest resampling the data. Resampling includes oversampling and undersampling. For oversampling, we create more points of the minority data to compensate for the imbalance. For undersampling, we reduce the points of the majority data to compensate for the imbalance. And, in this paper, we compare four resampling methods, random undersampling, random oversampling, Synthetic Minority Oversampling Technique (SMOTE), Adaptive Synthetic Sampling Method (ADASYN) on three benchmark Cybersecurity datasets, KDD 1999, UNSW-NB15 and UNSW-NB17, using Artificial Neural Networks (ANN). We evaluate the results using unweighted measures including precision, recall and the F-1 score. We also compare the training time the algorithm, which is often the major part of the total running time.

**Samantha Seals**

**Mathematics and Statistics**

***Operation in the Classroom: One Class's Collaborative Experience***

Faculty Mentor(s): Samantha Seals, Mathematics and Statistics

Lead Author Department: Mathematics and Statistics

Session: Main Poster Session

Statisticians are often part of a research team, supporting the scholarly activities of other researchers. While some students participate in research with faculty, the research environment can be difficult to emulate in the classroom environment. Projects are often a requirement in applied statistics courses, however, having students analyze a dataset freely available online does not provide essential collaborative experience. In STA6235, Modeling in Regression, Hasbro's Operation is being used to simulate data resulting from surgery. The class as a whole developed research questions, those with access to Operation will simulate data, one student is responsible for data management, and each class member is responsible for one part of the analysis and report generation. The class chose to model the following outcomes: length of surgery in seconds, number of attempts for successful surgery, number of mistakes during surgery, patient mortality. The class also chose to observe the following as possible predictors of the outcomes: sex, surgery type, right vs. left hand, age, hand size, hours of sleep obtained the night before, caffeine vs. no caffeine, and sitting or standing during surgery. This project is allowing students to experience the full research cycle in a collaborative environment. Further, because some students are not local to Pensacola, it is giving students experience collaborating with researchers that are in different time zones or even countries. Full details of project implementation will be given, including how students chose to communicate and work with colleagues not local to Pensacola, and preliminary analysis results will be disseminated.

**Christian Um Kaman**

**Mathematics and Statistics**

***Analyzing Botnet Traffic Using Machine Learning***

Faculty Mentor(s): Sikha Bagui, Computer Science

Lead Author Department: Mathematics and Statistics

Session: Main Poster Session

The increased amount of damage caused by malware attacks on a network is becoming more and more problematic to companies, homes, and government

agencies around, hence the world has been advancing the use of Machine Learning and Artificial Intelligence to detect and counter the malware. Using these methods will make it possible to combat unknown malware that cannot be detected by rule-based anti-virus software. In this work, we analyze the CTU-13 dataset of botnet traffic. The goal of the dataset was to have a large number of real botnet traffic mixed with regular traffic and background traffic. The data was capture at the University, Czech Republic, in 2011. We propose to analyze normal traffic and malware traffic using different machine learning techniques: Principal Component Analysis, Linear Regression, Random Forest and Support Vector Machine. In addition to accuracy, we will also compare the Attack Detection Rates and False Alarm Rates for mentioned machine learning models.

**Yanhui Zhu**

**Mathematics and Statistics**

***Fast Community Detection by SCORE and its Variants***

Faculty Mentor(s): Jia Liu, Mathematics and Statistics

Lead Author Department: Mathematics and Statistics

Session: Main Poster Session

In this paper, we consider the complex network where the nodes are divided into  $k$  disjoint communities. We study the spectral clustering on ratios of eigenvectors (SCORE) and its variants. In addition, We propose a new algorithm based on the SCORE on real-world and synthetic networks. The comparative numerical experiments show that the proposed algorithm achieves advantages in multiple prospects compared with other state-of-the-art algorithms in most of the data sets.

## MECHANICAL ENGINEERING

**Clark Bailey**

**Mechanical Engineering**

***Integrated Portable Rocket Motor Test Stand***

**Co-Author(s): Ian Mackenzie**

Faculty Mentor(s): James Mann, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

Millions of dollars in payloads and hardware are attached, every year, to rocket engines and shot into the atmosphere. It is imperative for people to know the performance and specs of their rocket motor and propellant before the launch, to not risk the contents of the rocket anymore than what is necessary. For this reason, people and companies use test stands to understand how their motors will function and run during a launch. We are working to create a test stand to collect data from several different motors and propellants for the reason given above. We are working toward making it more lightweight and optimizing its precision and accuracy. In addition to those things, we are working to ensure that all data that is important to analyze a rocket motor is able to be measured by our test stand. We are currently working on the smaller version that could test A-B size motors and then will expand our design and make adjustments where necessary to create a test stand that is able to test far larger motors. This project has the capability of becoming a long term project or a capstone project if we were to start incorporating some math techniques, such as Radial Basis Functions, to our analysis of our test stand. For now, it is just designing and assembling a portable, lightweight test stand.



**Clark Bailey** **Mechanical Engineering**

***Gathering Your ‘Sea Legs’: Extended Duration in an Offshore Environment Increases Postural Sway***

**Co-Author(s): Krystin Lehtola, Corey Grozier, Gretchen Cagle, Jesse Weaver**

Faculty Mentor(s): Jeffrey Simpson, Movement Sciences and Health

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

Mal de débarquement syndrome (e.g. sea legs), the feeling of continuous movement following exposure to boat movement, may negatively impact postural control. This field-based study examined possible changes in postural control after prolonged exposure to boat movement at sea. Methods: Balance of 24 adults (13M, 11F; age: 35.312 y; height: 170.338.8 cm; mass: 84.2317.0 kg) was assessed in the bilateral stance on a force platform before (PRE) and after (POST) a 7-hour deep sea fishing excursion. Eyes open (EO), eyes closed (EC), eyes open on foam surface (EOF), and eyes closed foam surface (ECF) conditions were tested and average sway, sway velocity, and sway range in the medial/lateral (ML) and anterior/posterior (AP) directions were compared PRE/POST using a paired t-test ( $p < 0.05$ ). Results: Significantly greater ML sway ( $p = 0.004$ ; PRE: 0.4030.14 cm vs POST: 0.4730.17 cm), ML sway range ( $p = 0.001$ ; PRE: 2.4230.66 cm vs POST: 2.8730.99 cm), AP sway ( $p = 0.045$ ; PRE: 0.6330.17 cm vs POST: 0.7230.30 cm), and AP sway range ( $p = 0.020$ ; PRE: 4.0130.80 cm vs 4.6431.56 cm) were observed at POST during EOF. During ECF, significantly greater ML sway ( $p = 0.027$ ; PRE: 0.4930.13 cm vs POST: 0.5630.15 cm) and AP sway ( $p = 0.020$ ; PRE: 0.8730.21 cm vs POST: 0.9830.24 cm) were observed at POST. Conclusions: These findings suggest that ‘sea legs’ impairs the ability to utilize appropriate sensory information in conditions dependent on somatosensory and vestibular feedback resulting in increased postural sway.

**Maria Biteeva** **Mechanical Engineering**

***Free-Space Optical Communication***

**Co-Author(s): Jacob Rook, Grant Rohrbaugh, Clinton Guernsey**

Faculty Mentor(s): Yazan Alqudah, Electrical and Computer Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

Free space optics (FSO) is similar to fiber-optic systems in that it uses a beam of light to transmit data, however, in FSO system the data is transmitted wireless instead of via fiber cable. There is a very broad range of applications where FSO systems are advantageous over traditional fiber optics. FSO systems can be used as a temporary communication solution in event of emergency situations (hurricanes and other natural disasters) where the physical lines might be down, it can be used to provide secure communication for military purposes, and FSO systems can also be implemented in smart vehicles and drones to provide communication with surroundings. Our goal for the project is to be able to replicate a typical communication system using the laser and photo diode as the medium to transfer the data. This will include being able to transmit the raw digital data. The data will come from a file on the transmitting computer and will be read and stored on the receiving computer. The project will focus primarily on the physical layer of communication, meaning that the file being transmitted will simulate data coming from multiple channels that was processed by higher-level layers of communication.

**Sam Brown** **Mechanical Engineering**

***Investigating Mechanochemical Effects in Industrial Scale Metal Cutting Processes***

Lead Author Department: Mechanical Engineering

Session: High Impact Practice (HIP) Showcase

**Sam Brown** **Mechanical Engineering**

***Investigating Mechanochemical Effects in Industrial Scale Metal Cutting Processes***

**Co-Author(s): Jacob Norre**

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

Our lab is currently investigating the effects that various chemical media have on the deformation process of ductile metals and alloys. Prior research has shown that the presence of the chemical media can reduce the amount of mechanical force (and energy) required to cut these “gummy” metals. Our group aims to delve deeper into this phenomena to pursue the fundamental understanding of primary shear and friction in deformation processing. This knowledge will be useful to a wide range of industry applications that involve and enhance the understanding of deformation mechanics. This semester we will use the linear slide research platform established in Spring 2019 to further explore the mechanochemical effect on ductile metals. Specifically, we aim to characterize the extent of the mechanochemical effect in deformation of AISI 316 structural stainless steel under a variety of operational conditions. This particular stainless steel has a broad range of industrial applications, and is known for creating complications in manufacturing processes. The proposed research will enable our team to fully characterize the deformation behavior related to this material and the role of various surface-active (SA) media in reducing the energy of deformation.

**Isaac Brunet** **Mechanical Engineering**

***ArgoTots***

**Co-Author(s): Zach Bolton, Conrad Echelle, Shae Gibbs, Ryan Kline, Garhett Smith**

Faculty Mentor(s): Bradley Regez, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

A children’s battery powered motor vehicle was modified to accommodate the special needs of a child who suffers from a physical disability. The analog control of the vehicle was removed and replaced with a remote-controlled system, allowing the parents to operate the vehicle from a distance. A frame was added to the vehicle along with seat belts to secure the child while the vehicle is in operation. The completed vehicle was delivered to the child and their family on Feb. 28th, 2020.

**Savannah Cowen****Mechanical Engineering*****Residential Greywater Treatment System*****Co-Author(s): Victoria Hoang, Noah Valloch, Michael Yates**

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

As vital resources such as water continue to become more and more strained due to population growth and overconsumption, it is critical that alternatives to conserve and reuse water are designed and implemented. The Residential Greywater Treatment System is an appliance-style system that allows residents to treat their household greywater on-site and reuse it later for irrigation. This aids in reducing overall consumption per household. The steps of traditional wastewater treatment utilize physical, biological, and chemical processes in the forms of primary, secondary, and tertiary treatment, respectively, to treat contaminated water. The Residential Greywater Treatment System takes these traditional steps and processes and implements four, non-traditional methods in order to accomplish effective greywater treatment. These components include a settling tank, worm chamber, biofilm housing, and constructed wetland. Each component provides a unique treatment method based on biological and physical processes. Once the water has passed through all four treatment components, it meets the minimum Food and Agricultural Organization requirements for irrigation on the parameters of clarity, total dissolved solids, and pH.

**Ryan Davis****Mechanical Engineering*****Spring 2020 SAE Argonautics Design Team*****Co-Author(s): Tyler Fortson, Nico Azar, Max Black, Branden Houck, Savannah Richardson, Cole Hansen, James Underwood, Ryan Mims, Brandon Beckowitz, Josh Belt**

Faculty Mentor(s): Carolyn Mattick, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

Each year, more than 85 university teams from around the country meet at the Aero Design West competition. The Argonautics team is excited to be joining them for the second time in 2020, and they look forward to building a legacy of achievement in future SAE Aero Design competitions. The SAE Aero Design competition is uniquely valuable because it provides engineering students with a real-life engineering challenge that emphasizes both technical and non-technical skills. More specifically, the annual event is the culmination of an aircraft design and development cycle that requires students perform complex analyses and trade studies using what they know about aerodynamics, flight mechanics, propulsion, structures, and materials. Moreover, the competition rules serve to simulate a set of customer objectives that students must meet, to the best of their ability, within a compressed one-year schedule. In this way, students learn more practical skills that are difficult to learn in a classroom, including teamwork and communication, project and budget management, system fabrication, integration, testing, and demonstration via competition. All of this is designed to prepare students to hit the ground running and become valuable members of the engineering workforce. The competition includes a technical presentation given to professional engineers, a technical and safety inspection of the aircraft to ensure it meets SAE requirements, and a flight. The ten minutes technical presentation allows the team to present their design and building process.

**Dempsey DeMars****Mechanical Engineering*****Solar Car Shell Design and Construction*****Co-Author(s): Mason Ward, Vince Zapata, Jamal Morris**

Faculty Mentor(s): Cheng Zhang, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

The University of West Florida Solar Car team was established to explore clean energy sources for applications in the automotive industry. The objective of this project is to construct a solar car shell so that the UWF Solar Car Team will be able to compete in the 2021 Formula Sun Grand Prix. With the constraints of the race's rules and the size of the already constructed frame, the shell will have a maximum height of 1.28m, a maximum length of 4.06m, and a maximum width of 2.2m. Another part as to why this shell is going to be so big is because of the power constraints of the solar panels. It was calculated that we would need a surface area of 6.96m<sup>2</sup> for the number of solar panels needed. For our current design we have a total surface area of 8.1m<sup>2</sup>. We have utilized SolidWorks to design all our shell designs. For the testing of the vehicle we have used both SolidWorks and ANSYS flow simulations to conduct the testing of the designs. Once we determine the lowest drag coefficient for the shape of the vehicle, we will begin construction of the shell of the vehicle. For the construction of the vehicle we will be first making it out of high-density foam to get the proper shape of the car. After construction of the foam shell is complete, we will use polycarbonate plastic to form the passenger bubble, while the rest of the shell will be made in fiberglass.

**Wade Earnest****Mechanical Engineering*****Chess Robot Capstone Project***

Lead Author Department: Mechanical Engineering

Session: High Impact Practice (HIP) Showcase

**Wade Earnest****Mechanical Engineering*****Chess Robot Capstone Project*****Co-Author(s): Bradley Stephen**

Faculty Mentor(s): Sam Russel, Electrical and Computer Engineering

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

Robots are revolutionizing our world in ways that 50 years ago could only be imagined in science fiction movies. In the health care industry, surgical robots are common place. In the military, flying robots, colloquially known as drones, litter the skies. This project provides another look at what robots are capable of while showcasing human-robot interaction. For this project, two robot-arms were designed and built to play the game of chess against each other. The robots can set the chess board, move pieces, capture pieces, promote pawns, castle, check and checkmate. Inverse kinematics is used to precisely move the robot-arms to reach a desired location. The decision for what moves the robots will make comes from an Android application that was developed specifically for this project. The app is installed onto two tablets that wirelessly communicate with the robots and each other. The app consists of a complete chess game with an artificial intelligence algorithm built into the code, allowing for human vs human gameplay or human vs AI game play. Thus, when a human makes a move on the

tablet, a command is sent to the appropriate robot and the robot will make the same move. Likewise, when playing against the AI, the AI will make a move on the tablet and send a command to the appropriate robot in which the robot will make the corresponding move. The results of this project demonstrate human-robot interaction while opening the door for countless possibilities.

**John Facer** **Mechanical Engineering**  
***Design, Construction, and Implementation of a Heating, Ventilation, and Air-Conditioning (HVAC) Calorimeter into a University Lab***  
**Co-Author(s): Bruce Jaret, Groves Jake, Nguyen Anderson, Rodriguez Michael, Rush Lem**

Faculty Mentor(s): Cheng Zhang, Mechanical Engineering  
 Lead Author Department: Mechanical Engineering  
 Session: Main Poster Session

In order to provide the University with a functional Heating, Ventilation, and Air-Conditioning (HVAC) Calorimeter, it must have a heat loss of less than 5%, maintain a temperature differential of 20°F between the calibrated rooms and outdoor air, and have the capability of testing the Seasonal Energy Efficiency Rating (SEER) value of HVAC equipment. All the walls are made using the same layers from exterior to interior: Oriented Strand Board (OSB), Two layers of R3-2 Foam Insulation Board, R13 Batt Insulation, One layer of R3-2 Foam Insulation Board, OSB. The floor and ceiling are made using the same layers from exterior to interior: Plywood, R13 Batt Insulation, Three layers of R3-2 Foam Insulation Board, Plywood. With the applied layers, it is expected that the two rooms will have an R-value of  $12.51 \frac{(\text{ft}^2)(\text{F})(\text{h})}{\text{BTU}}$  and a heat loss of 4.27%. The heat loss value will be determined using thermocouples and watt meters to record the dry bulb temperature and the total power being used to heat the room. The cooling capacity test will use additional tools such as psychrometers and a balance to measure the wet bulb and the mass of condensate. The calorimeter will provide the Mechanical Engineering Department the opportunity of a new lab, and it will also provide the University the ability to test third party HVAC equipment.

**Luke Fina** **Mechanical Engineering**  
***Implementation of Robotic Arm for Moving Object Sorting using Color Based Detection***  
**Co-Author(s): Noah Bowman, Alex Gibbs, Gabriella Arajuo, Joseph Johnson, John Kopala, Tomas Escobar te26@students.uwf.edu** **Mechanical Engineering**  
**Hal Marcus College of Science & Engineering Escobar**

Faculty Mentor(s): Hakki Erhan Sevil, Intelligent Systems and Robotics  
 Lead Author Department: Mechanical Engineering  
 Session: Engineering Showcase

Robotic arms are widely used in many factories around the world for a variety of automated tasks. One popular area of robotic arm implementation in automation is object detection, tracking, and sorting. This project is inspired by automated sorting application in single stream recycling plants. In the framework of Enterprise – Engineering Design class, our aim is to mimic an object sorting application similar to robotic arm and conveyor belt in a recycling plant, and our goal is to develop a robust, low-cost, and practical robotic arm system for that purpose. We successfully accomplished color based static object sorting in the Fall 2019 semester, and in the current semester, we are working on dynamic sorting; sorting while objects are moving. The robotic arm will correctly detect items by

color, pick them up from the conveyor belt, and place them into desired bins. Fully autonomous robotic arm sorting will be accomplished, by the end of the current semester, using developed algorithms and an Arduino microcontroller. The developed system will be tested and evaluated in terms of (i) number of items sorted correctly, and (ii) number of objects sorted under a certain desired time. For performance evaluations, object weight/size capability results, results of maximum sorting speed, and efficiency results will be presented at the end of the project.

**Joshua Johnson** **Mechanical Engineering**  
***Investigating the Hydro/Aerodynamic properties of Shark Skin***

Co-Author(s): Jessi Fortune, Sean McGee, Geoffrey Prestridge  
 Faculty Mentor(s): Cecilia Cao, Mechanical Engineering  
 Lead Author Department: Mechanical Engineering  
 Session: Main Poster Session

Bioinspired materials and design is an area of research and development in which the study of nature is used to synthetically enhance engineering materials and designs. We have read many conference papers, research papers, and internet articles in order to gain a better understanding of what bio-inspired materials and design is, and have decided to study shark skin. Specifically, we will direct our research towards advancing renewable energy technologies by studying the aerodynamic and hydrodynamic properties of shark skin. Shark skin is covered in thousands of “denticles,” or scale-like outcroppings that aid in the shark’s ability to be hydrodynamic. When a liquid travels over a smooth surface, vortices form and bump into one another, increasing drag. The denticles on sharks act as “guides” for the vortices, which direct their flow into one direction, thereby decreasing drag [1]. These denticles are so efficient at decreasing drag that they actually produce a self-propelling effect on the shark [2]. During the Spring 2020 semester, we have begun the process of modelling and performing simulations on the denticles in order to better understand the hydrodynamic and aerodynamic capabilities. We are currently in the process of using our models in conjunction with ANSYS simulation software in order to obtain simulated results on the hydrodynamic function of these models. We plan to correlate our results with other experimental data collected, after which we will begin the process of 3D printing the models and then begin to study them in a lab.

**Michael Letsinger** **Mechanical Engineering**  
***UWF Baja Race Team Suspension Team***

Faculty Mentor(s): Joseph Piacenza, Mechanical Engineering  
 Lead Author Department: Mechanical Engineering  
 Session: Main Poster Session

This presentation will be on the front and rear suspension sections of the 2019-2020 UWF Baja race car. It will outline all components of the front and rear suspension including design, materials, and calculations for strength and geometry. The UWF Baja team built and designed the suspension. The presentation will cover all aspects of the front and rear suspension to rule constraints, solid-works designs and FEA’s, as well as construction and final product. Final product will also be on display.

**Joseph Lupton** **Mechanical Engineering****Crystal Growth of Metal–Organic–Frameworks (MOFs) in Microgravity****Co-Author(s):** Brendon Ortolano

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

Metal organic frameworks (MOFs) demonstrate a broadening class of porous materials with multifunctionality and potentially tunable properties. Most MOFs are categorized by their large internal surface area, lattice topologies, and potential for application in areas such as gas storage, quantum computing, and liquid purification. The topologically spin frustrated MOF,  $\text{Cu}_9\text{X}_2(\text{cpa})_6\cdot 4\text{ZnH}_2\text{O}$  ( $\text{X} = \text{Cl}, \text{Br}, \text{F}$ ; cpa = anion of 2-carboxy-pentonic acid) – abbreviated CPA – serves as a promising structural materials class amenable to chemically tuned magnetic properties. We will report preliminary designs of a reaction chamber designed to synthesize this MOF in a microgravity environment. Vessel prototypes to date have included peristaltic pumps combined with custom syringe mechanisms to ensure predictable fluid hydraulics and sealed chambers to prevent chemical leakage. The design can be seen to have high compactness, volume efficiency, and manufacturability, though the complications of fluid dynamics in microgravity make the prototype difficult to test on Earth. Recent efforts have been focused on the development and testing of the stirring, pumping, and Sodium Hydroxide addition subsystems, in addition to determining the most efficient and repeatable method for adding dry powder chemicals. The key areas of focus are durability and manufacturing processes for all components. It is important that all parts are manufactured from a material that will not react with the mother liquor or Sodium Hydroxide and will result in a nonporous finish. Mechanical properties of the crystal lattice are also being investigated through compressive load testing using a low-force load cell and Pasco load frame.

**Braxton Mullarkey–Coffee** **Mechanical Engineering****NASA Human Exploration Rover Challenge****Co-Author(s):** Anthony Kaono, James Rowell, Braxton Mullarkey, Sarah Aguirre, Avery Lockett, Emmanuel Apusen, David Schroeder, Austin Flack

Faculty Mentor(s): John Ireton, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

UWF has assigned students to design and build a vehicle for the NASA Human Exploration Rover Challenge that takes place in Huntsville, Alabama on April 16th-18th. The competition requires a vehicle only powered by the students to drive through a course with 14 tasks and 5 optional obstacles for extra points. Eight students were put into a group to come up with original ideas and build on the previous years rover that was submitted. The Fall semester was used mainly for designing and setting the teams objectives up for the Spring semester. The team bought the parts and services that are being used with funding provided by UWF and OUR. Currently the team is building the vehicle and will compete in the competition in April. The team also plans on accomplishing a task by acquiring a soil/water sample that is spread out on the course which is stated in the NASA Rover guide. Select members will be leaving Thursday April 16th to get ready for inspection and last minute modifications. The following two days will be conferences and competing in the obstacle twice. We will return Sunday after awards have been given out and closing ceremonies are over.

**Eric Rowland** **Mechanical Engineering****UWF Enterprise Solar Car****Co-Author(s):** Megan O’Neal, Chance Bellflower, David Stuke, Tim Wise, John Ray, Nadia Kuchambi, Justin Mosely, Eli Hagedorn

Faculty Mentor(s): Cheng Zhang, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

The UWF Enterprise Solar Car Team will be showcasing the car frame, suspension and brake system. We will be explaining how each section was designed, the steps involved with the construction of it, and how the overall car will operate once it has been completed. 3D models and renderings will be used to show a prototype of the finished product that will give guest a further insight of the completed project.

**Brooke Sanders** **Mechanical Engineering****Spring 2020 Human Powered Vehicle Team****Co-Author(s):** Josh Farina, Guadalupe Nava-Pina, Braxton Burkett, Tom Crowson, Lucie Lesecq, Sibyl Cox, William Tice, Diana Hanks

Faculty Mentor(s): Michael Reynolds, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

The goal of the Human Powered Vehicle Team is to construct a design winning vehicle to compete at the ASME E-Fest South HPVC (Human-Powered Vehicle Challenge). Past semesters with this team have focused on research, such as attending an E-Fest as spectators, and preliminary fabrication. This semester, the team has focused on making the design a reality and constructing a working bike; this semester will be the first time the Human Powered Vehicle team from the University of West Florida will compete at the ASME HPVC. Preparing for this competition gives the students on the team an opportunity to practice their engineering principals on a project that is furthering sustainable transportation and human health. The team has already completed a bike frame, roll cage, wheels, steering, and pedals this semester, and will be ready for the ASME competition in Georgia on April 24th.

**Haydon Stone** **Mechanical Engineering****Baja SAE Drivetrain****Co-Author(s):** Austin Smith, Jonathan Myers, Chris Cloud, Haydon Stone

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

The SAE Baja Drivetrain team has designed and manufactured a fully working drivetrain system for the 2020 UWF SAE Baja vehicle that will compete in the SAE Baja Louisville Invitational. The power is to be delivered from the Briggs and Stratton 10 hp engine, equipped with a CVT (continuously variable transmission), to a chain and sprocket drivetrain system that will optimize the torque output while maintaining proper operating speeds. The rear will be spool driven with a locked axle. Another goal of the team was to have fully functional four-wheel drive capability through a clutch that will help propel the car over obstacles and steep terrain. Due to the implementation of four-wheel drive in the design, in order to enhance the maneuverability and handling of the vehicle, the



team utilized an open differential in the front axle which allows the two front wheels to spin at variable speeds. With a goal of 30 mph top speed in mind, we incorporated two gear reductions to handle the calculated drive ratio of 44:1. With this ratio this will allow for us to create desired wheel spin on dirt terrain through turns and reaching the goal of 30 mph.

**Robert Strong**

**SAE Baja Brakes**

**Co-Author(s): Shelby Savell**

Faculty Mentor(s): Joseph Piacenza, Mechanical Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

The goal for this year's brake team is to design and build a custom braking system. There are strict requirements on how the system must be designed and what components can be used. The best option in order to meet all mandated requirements and reduce un-sprung mass is to use a three-caliper system supported by a single tandem master cylinder. This year the car-size and weight has been reduced tremendously, which, in turn, will save money due to not having to design a heavy-duty braking system that requires more expensive parts. The measure of the brakes team's success will be done by evaluating two categories: weight and performance. The brake team has calculated that the weight of the entire brake system should be less than 20 pounds including the brake pedal and fluid. While a braking system that weighs 20 pounds or more would not be detrimental to the Baja team's success at competition, the goal of the team is to create a car that is as lightweight as possible and creating a system that meets those requirements would aid in that success. For the performance category, the brakes must withstand a static and dynamic test, as well as a four-hour endurance race. Creating a braking system that will lock all four-wheels under deceleration, lock all wheels causing the tires to skid from a standstill, and being reliable through the four-hour endurance race will be our overall measure of success.

**Mechanical Engineering**

**Shelbi Warner**

**UWF Baja Racing 2020 Chassis Design**

**Co-Author(s): Dalton Mason, Kyle Preston**

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

Our showcase will display the design and fabrication of the UWF Baja teams 2020 competition chassis. Design will be displayed in solidworks renderings as well as finite element analysis renderings to show reasoning behind design choices. The teams fabricated chassis will also be on display for spectators to see and compare to the preliminary design.

**Mechanical Engineering**

**Caleb Williams**

**Autonomous Field Painting Robot**

**Co-Author(s): Breanna Lunsford, Timothy Seketa, Nathan Waldorff, David Warren**

Faculty Mentor(s): Jeff McGuirk, Electrical and Computer Engineering

Lead Author Department: Mechanical Engineering

Session: Main Poster Session

**Mechanical Engineering**

Marking lines for sports fields is a mundane, time consuming task often left to volunteers or over-extended, tightly-budgeted parks & recreation departments. This can result in inconsistent and inaccurate field markings or inefficient use of financial and human resources. An autonomous field painting robot would remove these inconsistencies and make more efficient use of all available resources. In this research effort, an autonomous field painting robot is developed which uses a real-time kinematic (RTK) GPS navigation system to achieve centimeter positional accuracy. The field painter features an onboard bulk paint dispensing system and an eight gallon paint reservoir. A Raspberry Pi operates as the robot's central controller and executes a set of custom-developed navigation algorithms. Combined, these systems create a useful and efficient method of striping sports fields.

**Christopher Zukosky**

**Medieval Trebuchet**

**Co-Author(s): Bryen Williams, Kyle Miller, Christopher Zukosky, Chau Vu, Darrell Hall, Matthew Fulton**

Faculty Mentor(s):

Lead Author Department: Mechanical Engineering

Session: Engineering Showcase

As the key component of an experimental archaeological project sponsored by the University of West Florida history department, the Medieval Trebuchet Team has been commissioned to design and construct a fully functional scale replica trebuchet based on a period drawing subsequently approved by the project sponsor, Dr. Marie Therese Champagne. Of the many objectives, the key milestone is a fully constructed scaled replica trebuchet ready for presentation and demonstration at the Daily Life in Ancient Rome event hosted by the University of West Florida History Department in the spring of 2020. With an end goal of a launch distance of 200 feet.

**Mechanical Engineering**

## PHYSICS

**Christian Conkle**

**Determining the Electric Dipole Moment and Solvatochromic Effects of Rhodamine 6-G: Advanced Lab**

**Co-Author(s): Zane Burnett, Layne Jones**

Faculty Mentor(s): Aaron Wade, Physics

Lead Author Department: Physics

Session: Main Poster Session

The calculation of the electric dipole moment is typically reserved to very simple molecules, such as HCl or H<sub>2</sub>O, despite the fact that it is fundamentally necessary when discussing the optical properties of fluorophores. In this paper, we present an upper division Physics/Chemistry lab for students to determine the electric dipole moment of Rhodamine 6G and how it interacts with different solvents. Rhodamine 6G is used as a fluorescent dye in applications ranging from fluid mechanics to textiles. The absorption and emission spectra of Rhodamine 6G, in several solvents, are studied. The difference in the peak frequency of the absorption and emission spectra is called the Stokes shift. The changes in absorption and emission spectra for different solvents are called the solvatochromic effects. The preparation and measurement of the optical properties

**Physics**

for thirteen samples of Rhodamine 6G in different solvents is presented, each with a concentration  $\sim 10^{-5}$  mol/L. The theory of how to use the absorption and emission spectra to calculate the Stokes shift, the electric dipole moments in the ground and excited states, and the solvatochromic properties of the fluorophore in each solution is presented along with the results of the calculations.

**Daniel Duong**

**Physics**

***Exact Diagonalization of Quantum Spins with Long-Range Interactions***

Faculty Mentor(s): Christopher Varney, Physics

Lead Author Department: Physics

Session: Main Poster Session

In nature, frustrated magnetism often causes unusual magnetic ordering and phases. There are two common causes that lead to frustrated magnetism: the geometry and the long-range interactions of a material. As of recent, research on systems of cold atoms in optical lattices allows for the fine tuning of both interactions and geometry of a system. In order to better understand the possibilities in these experiments, we use exact diagonalization to study a collection of spins at zero temperature. In this presentation, we present analysis of magnetic order parameters and quantum information techniques used to locate phase transitions in the model.

**Daniel Egberongbe**

**Physics**

***Nanometer level positioning***

Faculty Mentor(s): Chandra Prayaga, Physics

Lead Author Department: Physics

Session: Main Poster Session

The goal of the project is to build a piezoelectric actuator that is capable of nanometer level precision. The purpose of the actuator will be to position samples on a nanometer scale. At present time, the piezostack is currently being tested to discover if the voltage applied versus the displacement produced is linearly related. The precision of the measurements is as high as  $1 \times 10^{-7}$  micrometers. In order to create the piezoelectric actuator, the piezo stacks must be properly tested so that behave properly with anticipated results. When all data is gathered, it will be plotted and the precision can be increased by knowing an accurate relation between voltage and displacement.

**Samuel Mills**

**Physics**

***Monte Carlo Simulation of Spins with Long-Range Interactions***

Faculty Mentor(s): Christopher Varney, Physics

Lead Author Department: Physics

Session: Main Poster Session

Frustrated magnetic systems have unusual magnetic ordering and phase transitions. Two causes of this are lattice geometry and long-range interactions between magnetic moments. Cold atom systems feature tunable long-range interactions for any lattice geometry. Exact quantum calculations of these systems are only possible for small numbers of spins. Consequently, we use Monte Carlo to analyze large numbers of spins to determine a phase diagram in the thermodynamic limit. The information on the phase transitions in the classical case will provide a point of comparison for quantum calculations.

**Mikaela Pabon**

**Physics**

***Spectral Calculations of 23-atom Boron Clusters***

Faculty Mentor(s): Christopher Varney, Physics

Lead Author Department: Physics

Session: Main Poster Session

Boron bears many similarities with carbon in that it has the ability to form unusual chemical structures. It is believed that boron can form nanostructures similar to fullerenes, nanotubes, and graphene. For small nanoclusters, there is an unusual pattern where clusters with odd numbers of atoms tend to form planar structures while clusters with an even number of atoms form double ring structures. In this presentation, we use Density Functional Theory to study the density of states, infrared, and Raman spectra for low-energy B<sub>23</sub> clusters.

**Benny Schundelmier**

**Physics**

***The Development of Four-Wave Mixing Spectroscopy to Measure Vibrational Spectra in the Low-Frequency Terahertz Range***

Faculty Mentor(s): Laszlo Ujj, Physics

Lead Author Department: Physics

Session: Main Poster Session

We report the progress of developing four-wave mixing spectroscopy to measure vibrational spectra in the low-frequency terahertz range. The optical tabletop system, we have improved in the Laser Spectroscopy Lab at the University of West Florida is a multipurpose system, capable of executing a variety of spectroscopy methods such as e.g. Raman, Coherent Raman, and Laser-Induced Breakdown spectroscopy. For this project, our focus is on Coherent Raman Spectroscopy, through three-color two-beam broadband nonlinear frequency mixing. The three-color nature of the four-wave mixing signal allows for an effective non-resonant signal suppression relative to the polarized and depolarized Raman bands. This type of nonlinear four-wave mixing has not been fully utilized for ultrafast coherent Raman microscopy. To demonstrate the precision and merit of our modified system, we present measured and processed spectra of isotropic samples and provide a characterization of the critical components that constitute our system.

**Courtney Bailey**

**Physics**

***A Novel Variation of the Art Gallery Problem with Sound Diffraction***

Faculty Mentor(s): Steven Bitner, Computer Science

Lead Author Department: Physics/Computer Science

Session: Main Poster Session

The art gallery problem is well known in computational geometry for its applicability in a variety of problems. The original problem asks for the number of guards or cameras needed for total visual surveillance of a polygon with a variable number of vertices. For plain polygons the variable number of vertices divided by three is adequate for coverage of the polygon. Variations to the problem can increase the computational complexity of a valid algorithm from deterministic polynomial-time(P) to nondeterministic polynomial-time(NP) or hard non-deterministic polynomial-time(NP Hard). Applying the art gallery problem to a smart home for total sound detection is a novel variation. Total sound detection would improve methods for monitoring the elderly. This would improve their level of safety and their quality of life by allowing them to stay

in their homes. Due to the diffractive nature of sound in this problem variation wavelength and frequency are chosen to determine the angle sound will bend around obstacles. This ensures microphones can be placed at the most optimal positions using the triangulation method. A range of common household frequencies and corresponding wavelengths are used for applicability. House conditions of constant temperature and sea level elevation are assumed. The sound intensity gradient is included for accuracy. Several polygons with variable numbers of vertices are studied theoretically. One polygon is studied experimentally using a miniature smart home model. The complexity of the sound detection variation is mapped to the art gallery problem to prove it is in nondeterministic polynomial-time(np).

## USHA KUNDU, MD COLLEGE OF HEALTH



### HEALTH SCIENCES & ADMINISTRATION

**Veronica Rosa**

**Health Sciences and Administration**

#### ***The Impact of Substance Abuse on Healthcare Costs***

Faculty Mentor(s): Jessica Ryan, Health Sciences and Administration

Lead Author Department: Health Sciences and Administration

Session: Main Poster Session

Background: We assume that there is an increase in healthcare services, and thus costs, among individuals who are abusing substances. However, there is some variation among individuals afflicted by substance abuse in terms of which populations have the highest utilization of healthcare services, which payer source is applied, and the individuals' drug of choice. Our research expounds on these identifiers and how each category impacts healthcare costs. Method: Our data was gathered from the American Health Care Association (AHCA) inpatient 2016-2018 adult records only and hospital financial information ownership status. Geographical indicators were included with zip code data from 2016-2017 (2018 AHCA data was merged with 2017 zip code data) from <https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-statistics-zip-code-data-soi> and rural counties were designated using FL DOH adult!Nownruralzip16, etc. Costs were calculated using cost to charge ratios- total patient care services expense/ total patient care services revenue. We will use a linear regression to model total healthcare costs. Controls: Substance abuse in this study was controlled using F11: Opioid, F12: Cannabis, F13: Sedative, hypnotic, or anxiolytic, F14: Cocaine, F15: Other stimulant, F16: Hallucinogen, F18: Inhalant, some of T40: Poisoning by, adverse effect of and underdosing of narcotics and psychodysleptics, and some of T43.6: Poisoning by, adverse effect of and underdosing of psychostimulants. We will also control for length of hospital stay, patient demographics, comorbidities, hospital factors such as rural location and ownership status, and ICD-10 codes of certain mental health diagnoses, TBD. Results and Discussion: Still in progress.

### MEDICAL LABORATORY SCIENCES

**Grace Mills**

**Medical Laboratory Sciences**

#### ***Mechanisms to Dissolve Amorphous Urate Crystals in Urine***

**Co-Author(s): Anna Freeman, Parisa Taghi**

Faculty Mentor(s): Kristina Behan, Medical Laboratory Sciences

Lead Author Department: Medical Laboratory Sciences

Session: Main Poster Session

Amorphous urate crystals are a non-pathologic finding in concentrated urine samples that have cooled below body temperature. While they are not significant, their presence obscures the microscopic analysis of significant findings such as blood cells, bacteria and yeast. Increased temperature can dissolve these crystals. The goal of this study is to identify a solvent that rapidly dissolves the crystals while retaining significant findings. We also investigated the temperature conditions for dissolving the crystals. Eighty-five urine samples were collected from 56 students and faculty at UWF. Twenty-one samples formed amorphous urate crystals. Three solvents were tested at varying concentrations: sodium hydroxide, ammonia and lysine for the ability to dissolve crystals. The effect of various temperatures and time was also tested. All samples were tested for pH and specific gravity, and examined microscopically with and without sodium hydroxide. Red blood cell destruction was quantitated using a hemacytometer. The effect of sodium hydroxide on formed elements was evaluated by microscopy. Amorphous urate crystals formed in urine with a pH of =6, and a specific gravity of 1.025-1.030. Warming the sample to 50°C for 90 seconds dissolved crystals in 8 of 10 samples. 50mM sodium hydroxide was able to dissolve the crystals without destroying RBC, WBC, bacteria or yeast. Ammonia and lysine did not dissolve the crystals. 50mM sodium hydroxide added to urine sediment can dissolve amorphous urate crystals without destroying other significant findings. This is an additional tool for the medical laboratory scientist performing urine microscopic analysis.

### MOVEMENT SCIENCES & HEALTH

**Joseph Bloyd**

**Movement Sciences and Health**

#### ***Isolated First Rib Fracture Proximal to Sternum in a 17-year-old Running Back***

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

A 17-year-old male running back was running the ball in for a touchdown and was tackled with an outstretched arm and landed on anterior aspect of ribcage. Noticed a "pop" and complained of pain but kept playing. After the game, athlete presented with minimal edema over the Sternoclavicular (s/c) joint, with little to no joint play (normal). No noticeable deficit in range of motion 5/5 strength. Sent athlete to doctor for further evaluation. Doctor ordered x-rays which came back unimpressive. Doctor followed up with CT scan and found a proximal fracture at the first rib and sternal joint. First rib fracture are either: not common or missed due to improper imaging. DDx: Sternoclavicular joint sprain, soft tissue damage, proximal clavicle break; Treatment: Non-operative conservative treatment, including rehabilitation, modalities, and refraining from any activities that exacerbate the pain. Uniqueness: Clavicle injuries are common in collision sports;

however, this case is unique because most of the time the first rib fracture is in junction with another fracture and most commonly it is the clavicle. Conclusion: Athletic trainers need to be aware that isolated first rib fractures, even though they are rare, should be a differential diagnosis for broken bones in the shoulder girdle and may present like an s/c joint sprain.

**Gretchen Cagle** **Movement Sciences and Health**  
**Ankle Kinematics During Inversion Perturbations in Subjects with Chronic Ankle Instability**

**Co-Author(s): Nicole Rendos, Rachel Koldenhoven, Samuel Wilson, Ethan Stewart, Alana Turner, Harish Chander, Adam Knight**

Faculty Mentor(s): Jeffrey Simpson, Movement Sciences and Health  
 Lead Author Department: Movement Sciences and Health  
 Session: Main Poster Session

Although reduced ankle joint stabilization is well-documented in individuals with chronic ankle instability (CAI), anticipatory strategies to inversion perturbations has received less attention in CAI cohorts. As such, this study examined ankle kinematics during unanticipated and anticipated inversion perturbations in individuals with and without CAI. Methods: Participants with CAI (n=15; age: 21.32y; height: 1.730.1m; mass: 3.4315.2kg) and controls (n=15; age: 22.32y; height: 1.730.2m; mass: 75.5313.0kg) completed unanticipated and anticipated single leg drop-landings onto a 20° laterally inclined force platform from a height of 30 cm. Ankle kinematics were analyzed from 200 ms pre- to 200 ms post-landing using a 2 (group) x 2 (landing condition) statistical parametric mapping analysis of variance (p<0.05). Results: Significant group main effect revealed greater ankle internal rotation in the CAI group from 130-200 ms post-landing (p=0.035; mean difference: 6.0531.45°). Further, anticipated landings resulted in significantly greater ankle inversion from 200 ms pre-landing to 10 ms post-landing (p<0.001; mean difference: 4.3431.37°), but was significantly less from 32-200 ms post-landing (p<0.001; mean difference: 4.5931.58°) regardless of group. Conclusions: While similar ankle frontal plane movement was observed in both groups, greater ankle internal rotation during forced inversion of the ankle complex upon landing could be associated with recurrent injury in CAI.

**Micaela Cooley** **Movement Sciences and Health**  
**Avoidable Loose Bodies in The Ankle of a Division II Quarterback**

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health  
 Lead Author Department: Movement Sciences and Health  
 Session: Main Poster Session

Nineteen-year-old freshman quarterback is a transfer from a division one school where he suffered multiple ankle injuries. Additionally, the injuries were not addressed or treated properly, which led to the athlete playing with pain resulting in recurring problems. Upon transfer to his current college the pain recurred again resulting in altered mobility and play. Throughout the fall season the athlete complained of a locking sensation in his ankle. Conservative treatment by the athletic training staff was unsuccessful. The goal of the treatment was to use rehabilitation exercises to increase joint space and flexibility. Finally, an MRI and X-ray were ordered and the images revealed bone chips in the left ankle that needed to be removed. The bone chips developed due to the trauma to the joint caused by the frequent ankle sprains.

**Ashley Covington** **Movement Sciences and Health**  
**Fifteen year-old Junior Varsity Football Player with Isolated Right First Rib Fracture**

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health  
 Lead Author Department: Movement Sciences and Health  
 Session: Main Poster Session

A fifteen year-old sophomore junior varsity football player started experiencing right shoulder pain during the spring of his freshman year. He received an x-ray of his right shoulder and was cleared. During the fall of his sophomore year he complained of pain and numbness in his right shoulder and right arm. While playing in the second game of the season the athlete tackled an opposer leading with his right shoulder. The athlete was placed on injured reserve for the rest of the game due to the aforementioned symptoms in his shoulder and arm. The athlete was then referred to a physician three weeks later due to symptoms still being present. The athlete was diagnosed with an isolated first rib fracture with calcification. The subject matter experts suspected that the discomfort originated in the spring of his freshman year. The physician's timeline for the injury is as follows: a small stress fracture occurred during his freshman year, tackles as well as training throughout the season aggravated the rib and the tackle in the second game of his sophomore season caused the rib to transition into a full fracture.

**Taylor Garcia** **Movement Sciences and Health**  
**ECG Stress Characteristics In Division II College Athletes**

Co-Author(s): Eric Vinke, Anthony Farnand, Kameron Bethell  
 Faculty Mentor(s): Ludmila Cosio-Lima, Movement Sciences and Health  
 Lead Author Department: Movement Sciences and Health  
 Session: Main Poster Session

Two-thirds of sudden cardiac deaths are attributable to underlying cardiovascular conditions in young collegiate athletes. A 12-lead exercise stress test is a screening tool that can detect these abnormalities that may predispose collegiate athletes to sudden cardiac death, and can ensure athletes meet the physical demands of training and competition. The purpose of this study was to evaluate the electrocardiographic (ECG) characteristics of Division II collegiate athletes using the Seattle Criteria. METHODS: Fifty two athletes (Males = 26; Females = 26) of various ethnicities (Caucasian = 65%, Latino/Hispanic = 20%, and African American = 15%); from soccer (27%), tennis (17%), basketball (15%), softball (14%), cross country (9%), volleyball (6%), football (6%), and swimming (6%) completed cardiovascular screening with resting and exercise 12-lead ECG analysis. ECG abnormalities and anthropometrics were compared across race, gender, and sports using an ANOVA. Chi-square analysis was used to test for differences in the frequency of ECG findings across gender, race, and sports. RESULTS: Although sport was not a predictor for an abnormal ECG, 73% of the athletes presented with athletes' heart configuration, which was significantly higher in males than females (p = 0.02). The highest independent predictor of abnormal ECGs was found in Latino/Hispanic athletes, when compared to Caucasian and African American athletes (p = 0.03). CONCLUSIONS: A majority of Division II athletes presented with 'abnormal' ECGs due to cardiac remodeling. With newer and more sensitive ECG screening criteria, the prevalence of false-positive tests is declining.



**Corey Grozier** **Movement Sciences and Health**  
**Postural Sway Variability Increases After a Deep Sea Fishing Excursion - A Field-Based Study**

**Co-Author(s): Clark Bailey, Krystin Lehtola, Gretchen Cagle, Jesse Weaver, Samuel Wilson, Harish Chander, Nicole Rendos**

Faculty Mentor(s): Jeffery Simpson, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

Coordinated motor responses are warranted in order to maintain postural equilibrium. Feelings of passive movement often experienced following exposure to boat movement (e.g. sea legs) may result in postural corrections that are more variable and less efficient. Therefore, the purpose of this study was to examine changes in postural sway variability after an extended duration on a boat at sea. Methods: Postural sway was assessed in bilateral stance on a force platform in 24 adults (13M, 11F; age: 35.312 y; height: 170.338.8 cm; mass: 84.2317.0 kg) before (PRE) and after (POST) a 7-hour deep sea fishing excursion. Standard deviation (SD) of the sway excursion and sway velocity were analyzed in the medial/lateral (ML) and anterior/posterior (AP) directions during 30 s trials in the following conditions: eyes open (EO), eyes closed (EC), foam surface eyes open (FEO), and foam surface eyes closed (FEC). Dependent sway variables were compared PRE/POST using a paired t-test (p<0.05). Results: Significantly greater ML SD sway excursion was found at POST during EC (p=0.04; PRE: 0.1030.04cm vs POST: 0.1330.06cm) and FEO (p<0.01; 0.2830.07cm vs POST: 0.3430.11cm). AP SD sway excursion was also significantly increased at POST during FEO (p=0.03; PRE: 0.4730.11cm vs POST: 0.5530.20cm) and FEC (p=0.02; PRE: 0.6530.16cm vs POST: 0.7630.21cm). Conclusions: Extended durations on a boat at sea increase the variability of postural sway upon returning to land. This likely results from the inability to use appropriate sensory information during balance conditions dependent on vestibular and somatosensory feedback.

**Case Jackson** **Movement Sciences and Health**  
**Comparison of Handstand Push-Up and Overhead Press Performance**

Faculty Mentor(s): Lauren Adlof, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

Resistance training is a traditional method of improving muscular strength and endurance. However, calisthenics may be a comparable option for those who do not have access to a gym, or find bodyweight training more enjoyable. Research examining the relationship between calisthenics and resistance training, especially in the shoulder muscle group, is scarce. RESEARCH QUESTION: Does the current literature support a relationship between calisthenics and resistance training performance, and is handstand push-up performance correlated with overhead press one repetition maximum? FINDINGS: Multiple studies compared push-ups to bench press and found a strong correlation between repetitions to failure in push-ups, and bench press with an equated load (Eckel, 2017). Other studies compared low-load bench press, push-ups, and push-up progression groups, and found similar strength improvements between groups (Kikuchi & Nakazato, 2017; Kotarsky et al., 2018). Studies also found similar levels of muscle activation in the bilateral leg press, chair rise, and hip thrust movements (Vinstrup et al., 2017). Research also found that handstand quality and duration

was strongly correlated with maximum push-up repetitions in one minute (Hedbávný, Bago, & Kalichová, 2013). SUMMARY: There is evidence to support a relationship between calisthenics and resistance training, but more research should focus on a variety of muscle groups, like the shoulders. PRACTICAL APPLICATION: Calisthenics training may be comparable to resistance training, and can be a suitable alternative for developing muscular endurance and strength in athletes without access to weights. This evidence will inform a future pilot study comparing handstand pushup and overhead press performance.

**Jessica Landingham** **Movement Sciences and Health**  
**LEGG Calvin-Perthes Disease in an Adolescent High School Multi-Sport Athlete**

Resulting in Hip Replacement

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

18-year-old male, high school football, baseball, and basketball player was diagnosed with Legg-Calvin-Perthes disease at the age of 5. Legg-Calvin-Perthes disease is a developmental disorder affecting the femoral head causing avascular necrosis, or bone death. The patient was noticed walking on tip toe on right leg at the age of five and was then taken to doctor with apparent leg length discrepancy. After noticing an abnormality in the X-Ray imaging, the patient was referred to an orthopedic surgeon from their pediatrician. Receiving the diagnosis at that point in treatment, the patient had a total hip reconstruction at age 5 that included reshaping of the femoral head, cutting of the femur to reposition joint to increase blood flow, and stretching of the Achilles because of severe tightness due to the leg length discrepancy. After the procedure the patient continued through life with increased mobility and strength but abnormal leg length and hip formation. Athletic activity was placed on hold, and imaging was conducted (MRI and X-Ray) showing that cartilage formation in the joint was at a minimum and blood flow had been reduced due to a combination of growth and shifting of femoral head. This resulted in noticeable muscle atrophy in the involved leg compared bilaterally. Summer in between junior and senior year, a full hip replacement surgery was deemed the only true way to fix the issue and restore ability to compete in sports and participate in activities of daily living.

**Payton Price** **Movement Sciences and Health**  
**Acute Proximal Anterior Fibular Head Dislocation in an MLS Soccer Player**

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

A 24-year-old professional soccer player during a game went into a challenge for the ball in the 90th minute and collided with his opponent. He heard a loud pop followed by pain over the right fibular head and was unable to weight bear. Pain was 8/10. During initial evaluation, there was obvious gross deformity that suggested a fibular head dislocation. The athlete was stretchered to the locker room where the team doctor evaluated him. The patient was then transferred to the emergency room where X-rays showed a proximal fibular head dislocation to the right fibula. The patient had right knee pain, but no numbness or tingling. There were no other injuries reported.

**Benny Segovia Ruiz****Movement Sciences and Health*****Endurance Exercise-Induced Cardiac Protection Against Metabolic Distress*****Co-Author(s): Joung Bo Ko, Madilene Wei, Joshua Cook, Yongchul Jang, Ludmila Cosio-Lima**

Faculty Mentor(s): Youngil Lee, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

Undesired caloric imbalance due to excess caloric intake (e.g., combination of high fat and high sugar diet) and insufficient caloric expenditure (e.g., avoidance of physical activities) are linked to a higher risk of heart diseases. In this study, we investigated if endurance exercise training ameliorates metabolic disorder-induced anomalies of autophagy (self-eating), metabolic signaling, and advanced cellular senescence (aging) in the heart, using a mouse model of obese/type 2 diabetes induced by high-fat/high-fructose diet. Methods: C57BL/6 female mice (10 wk. old) were randomly divided to three groups: normal chow diet group (CON, n = 11), high-fat diet/high-fructose (HFD/HF) group (n = 11), and high-fat diet/high-fructose + endurance exercise (HFD/HF + EXE) group (n = 11). HFD/HF + EXE mice performed treadmill running exercise for 60 min-d<sup>-1</sup>, 5 d-wk<sup>-1</sup> for 12 wks. Results: Our data showed that EXE improved HFD/HF-induced weight gain, fasting blood glucose levels, and visceral fat contents. Strikingly, while HFD/HF provoked myocyte senescence and inflammation, EXE completely revoked them. Moreover, HFD/HF impaired autophagy, a conserved catabolic process involved in cellular protection, whereas EXE enhanced it. In addition, although HFD/HF promoted oxidative damages in the proteins and lipids of the myocytes, EXE prohibited the damages by overexpressing crucial antioxidant enzymes. Finally, our data for the first time showed that EXE-induced apoptosis (programmed cell death) is associated with myocyte protection. Conclusion: In summary, our results indicate that regular EXE may protect the heart against metabolic disorder by enhancing metabolic reprogramming, cellular homeostasis, and antioxidative capacity.

**Debra Vinci****Movement Sciences and Health*****Preschool Teachers' Feedback on Reading a Children's Picture Book to Foster Physical Literacy in a Preschool Setting*****Co-Author(s): Christopher Wirth, Alexandra Venezia Carroll**

Faculty Mentor(s): Debra Vinci, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

There is a growing body of evidence supporting the use of picture books in children's life experiences. Children's picture books have been a successful strategy to increase fruits and vegetable intake in young children. However, there is limited understanding on the use of children's picture books in addressing physical literacy in this population. The children's book Walker Finds His Wiggle was given to teachers in childcare centers in NW Florida. Only teachers who taught in 3-4 year old classrooms were included in the study. Participants had one week to incorporate the book into their daily lesson plan. One week following the initial meeting, childcare teachers were asked to participate in a brief interview. The interviews were semi-structured and asked questions about preplanning, use of the book, curricular inclusion, children's reactions, and their perceptions about movement. All interviews were audiotaped, transcribed

verbatim, and then coded using thematic analysis. N = 26 female teachers (15 Caucasian, 8 African American, 3 Other) participated in the interviews. Seventy-seven percent were 39 years or younger and had an average of 13.28 years of childcare experience. None of the participants had read the book prior to the study. The majority of teachers identified that movement was the focus of the book. They felt that the book was unique in that it was interactive and encouraged children to be active. All participants stated that they would continue to use the book in their classrooms and all valued the need to incorporate movement in academic

**Ashlee Viray****Movement Sciences and Health*****Youth Coach Injury Prevention and Emergency Preparedness Modules*****Co-Author(s): Karli Conti, Priya Pilla**

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

Within all the educational modules, the purpose of this applied research project is to engage students with community partners to develop a method to keep youth athletes at their best while educating coaches on how to be prepared in case of emergency. Each of the modules includes learning objectives and goals which outline the expected outcomes for this project. Content research was completed by athletic training students. A computer science major designed the modules by creating pictures, charts, and graphs which illustrated the information. Modules that were included in this project are: Heat-related illness is a growing emergent health concern which youth coaches should be educated in because of how frequent incidences are becoming. Mild Traumatic Brain Injuries is any injury to the head caused by an outside force. A concussion is a mild traumatic brain injury (mTBI) caused by a direct blow to the head or neck. Emergency Action Plans (EAP) are policies and procedures made by event, company, or location administrators which explicitly states how to handle an emergency during events. The EAP explicitly states the chain of command, actions taken, exact location, and who to call when an emergent event takes place. Proper fitting of equipment is essential in preventative care for youth athletes. these modules will be used to teach and inform coaches on injury, illness, and emergency preparation to help keep athletes safe and healthy. The vision is for coaches to be required to complete this training as part of a state-wide mandate.

**Madeline Wei****Movement Sciences and Health*****Exercise-Induced Hepatic Protection Against Metabolic Distress-Mediated Non-Alcoholic Fatty Liver Disease*****Co-Author(s): Benny Segovia, Josh Cook, Yongchul Jang, Joungbo Ko, Ludamila M Cosio-Lima**

Faculty Mentor(s): Youngil Lee, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

Non-Alcoholic Fatty Liver Disease (NAFLD) is one of the most common diseases in the United States affecting almost 25% of the U.S. population. While there is no cure for NAFLD, it has been established that endurance exercise can help to protect the liver from NAFLD through the restoration of liver function. This study investigated if endurance exercise-induced protection against NAFLD is associated

with prevention of advanced aging. The high-fat/high fructose diet was chosen because it replicates NAFLD. Mice (n=33) were assigned into three groups, a control group (CON, n=11), a high-fat + high fructose group (HFD+HF, n=11), and a high-fat + high fructose + exercise group (HFD+HF+EXE, n=11). The mice assigned to HFD+HF and HFD+HF+EXE groups were fed the assigned diets for 12 weeks. After that, the mice assigned to the exercise group were habituated with treadmill running with slow speed walking and running for five days. Then they started treadmill running exercise for 13 weeks at a gradual speed increase from 12 to 16 m/min (an increase from 40% to 70% of maximal running capacity). The mice assigned to sedentary groups remained in their cage. All mice were sacrificed 24 hours after the last exercise session. Our study showed that that endurance exercise concomitant with HFD/HF prevented metabolic distress-induced hepatic senescence (aging). Interestingly, this protection concurred with improved autophagy, an evolutionarily conserved catabolic process required for cellular homeostasis. Thus, this study suggests that exercise-induced autophagy may play a crucial role in prevention of metabolic stress-induced hepatic senescence.

**Ashley Wilson**

**Movement Sciences and Health**

***Muscle Anomaly Presented with Symptoms in a High School Football Player***

Faculty Mentor(s): Christopher Dake, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

A 15-year-old football player complained of shoulder pain while weightlifting/strength training during the off season. The athlete continued workouts for a couple months without notifying coaches or the athletic trainer. Additionally, some of the symptoms the athlete experienced are popping and clicking in the right shoulder. Pain was the worst during push press, power cleans, and bench press. The physician's initial clinical diagnosis was a SLAP tear in the glenohumeral joint. The results from the MRI found that the rotator cuff and biceps tendon appeared to be normal, however the physician did find that the superior aspect of the labrum had a partial thickness tear but was otherwise intact. The physician and athlete decided that surgical intervention would be the best outcome for the injury. While performing the arthroscopy the physician noticed that the labrum was actually intact, however, there was an unidentified band of tissue between the insertion of the long-head of the biceps tendon and the superior aspect of the labrum.

**Eric Vinke**

**Movement Sciences and Health**

***Twelve-lead ECG and Echocardiography Evaluation in Division II College Athletes***

**Co-Author(s): Anthony Farmand, Taylor Garcia, Gretchen Cagle**

Faculty Mentor(s): Ludmila Cosio-Lima, Movement Sciences and Health

Lead Author Department: Movement Sciences and Health

Session: Main Poster Session

The presence of cardiac abnormalities due to ventricular mass and volume has been documented in elite and Division I College athletes. Due to limited resources, cardiovascular screening among Division II College athletes is scarce or non-existent. PURPOSE: To examine ventricular remodeling through electrocardiographic (ECG) characteristics and focused echocardiography (FECH) in Division II college athletes. METHODS: Thirty six athletes (males = 18;

females = 18) of different ethnicities (Caucasian = 60%, African American = 40%) from basketball (48%), soccer (27%), volleyball (9%) and football (16%) completed cardiovascular screening with a resting 12-lead ECG and focused echocardiography analysis. ECG abnormalities were compared with race, gender, and sports using a mixed model ANOVA. RESULTS: Although sports teams were not predictors for an abnormal ECG, 20% of the athletes presented with abnormal ECGs. The highest independent predictor of abnormal ECGs was found in African American males, when compared to Caucasians (65% vs. 32%; p = 0.035). African American male athletes had, on average, higher left ventricular mass indexes (72 + 8 vs 66+ 8 g/m<sup>2</sup>; p = 0.008), higher mass/volume ratio (1.01 + 0.11 vs 0.98 + 0.07 g/ml; p = 0.002), and higher QRS vector magnitudes (2.9 + 0.5 vs 2.4 + 0.4 mV; p = 0.002) than Caucasian male athletes. In addition African American athletes demonstrated a significantly greater prevalence of left ventricular hypertrophy compared to Caucasians male athletes (68% vs. 32%; p = 0.04) and all female athletes (72% vs. 21 %; p = 0.001). CONCLUSIONS: African American male athletes

**PSYCHOLOGY**

**Samaria Alston**

**Psychology**

***Investigating the Effects of Maternal Health on Children***

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

In this project, a literature review will be conducted on research involving maternal mental health and its effects on children. Results from previous literature indicate that young children are more likely to exhibit developmental issues (e.g., delays, learning disabilities) when the mother suffers from mental health issues (e.g., depression, anxiety). In this assessment of the literature, other variables, such as parental socioeconomic status, father's involvement, individual child temperament, and family stress will be investigated to more fully understand confounding variables on these relations. Overall, through this literature review, I will highlight the current findings and confounding variables relating maternal mental health to child outcomes, based on different topical areas (e.g., behavioral outcomes, academic outcomes, attachment). This project is important because it will help to bring together all of the findings in this area, which can help assist practitioners with early interventions.

**Kaitlyn Baldwin**

**Psychology**

***Attitudes Towards Menstruation in College Women and Men***

**Co-Author(s): Ashlyn Doty, Sadan Yagci**

Faculty Mentor(s): Hui-Ya (Gail) Han, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Studies have been conducted to understand menstrual stigma in society and have found evidence that women internalize this stigma and feel required to modify their behaviors to adapt to societal rules surrounding menstruation. The purpose of our research is to replicate these studies and further explore the prevalence of and reasons for stigma and individual perceptions surrounding the discussion of women's menstrual cycles in college women and men. In a previous study, we found that women and men self-report mostly neutral to slightly



positive attitudes towards menstruation. Conversely, participants reported that they perceive society to have negative attitudes towards menstruation. In addition, they reported having seen or experienced instances where they or others have been stigmatized or discriminated against due to menstruation. This discrepancy may expose a gap between expectations and reality regarding who holds stigma against menstruation. As such, we have modified our previous survey with more direct questions to better reveal participants' true attitudes. The modified survey will involve semi-structured and open-ended questions regarding perceived stigma, internalized stigma, experienced stigma, and menstruation related stereotypes. We will also be using an Implicit Association Task (IAT) to measure implicit bias related to internalized menstruation stigma. We expect that the improved survey will reveal that participants externally report no self stigma but will report that they perceive society as being stigmatized against menstruation. The IAT will reveal that participants internalize menstruation stigma and hold negative associations about menstruation. Data will be collected and analyzed from November 2019 through March 2020.

**Eric Bolter** **Psychology**

***Psychometric properties of visual analog mood scales***

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

This study examines the psychometric properties, such as reliability and validity, of visual analogue mood scales. Comparisons are drawn across measures of mood, including strengths and weaknesses in clinical versus non-clinical environments, different populations, varieties of the measure, and reliability and validity scores. A comprehensive literature review revealed 6 primary measures of mood, 4 of which have been confirmed to exhibit high reliability and validity. Findings suggest promise in the measures that have not been tested for reliability and validity and empirical evidence showing the robust psychometric properties of all other explored measures of mood.

**Eric Bolter** **Psychology**

***Influence of Institutional Familiarity on Trust in Informed Consent***

**Co-Author(s): Margaret Hollander**

Faculty Mentor(s): Jocelyn Evans, Government

Lead Author Department: Psychology

Session: Main Poster Session

This study examines the effects of institutional familiarity on a participant's trust in the institution, researcher, and the overall informed consent process. The study draws on participants from two cooperating universities (West Florida and James Madison), with a representative from each institution. Researchers conducted face-to-face interviews at both institutions as representatives from different institutions in order to compare how institutional familiarity influences trust. Thematic analysis was used to analyze the resulting responses and compare them across institutions. Findings are predicted to indicate trust rising with participant familiarity in the representative institution, particularly institutions of high prestige. Previous literature suggests that participants do not read or comprehend informed consent as participants often blindly accept the terms due to the presence of incentives, the pressure of an authority figure such as

the researcher, and the reputation of the primary institution. These intervening variables are severe detriments to the process of informed consent and present a coercive element to the participant that overrides their decision to consent, thereby rendering the process of informed consent largely useless. Despite the severity of this problem, there is very little literature examining the relationship between a participant's trust in the institution and the informed consent process.

**Anamar Borja Ceballos** **Psychology**

***Implicit and Explicit Stress Mindset in College Students.***

**Co-Author(s): Amanda Fayard, Joe Cox**

Faculty Mentor(s): Hui-Ya (Gail) Han, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Stress mindset is the degree to which one perceives stress to be enhancing or debilitating for health and performance outcomes: a positive stress mindset and a negative stress mindset, respectively. Crum et al. (2013) found that stress mindset can be altered to either a positive or negative mindset through a short video manipulation. The goal of this study is to validate the stress mindset IAT, correlating it with a measure of explicit, self-reported stress mindset, the Stress Control Mindset Measure (SCMM), and using the aforementioned videos as a mindset manipulation. Participants are randomly assigned to a Positive Mindset experimental group, Negative Mindset experimental group, or a control group. Experimental group participants will watch the mindset manipulation videos and complete the SCMM and IAT before and after. We hypothesize that (1) the IAT will measure the difference in stress mindset between participants in the experimental group who underwent mindset manipulation compared to participants in the control group who did not undergo mindset manipulation, and (2) IAT scores will be significantly related to SCMM scores. A two-way mixed design analysis of variance (ANOVA) with baseline stress mindset (positive, intermediate, negative) and stress mindset manipulation (positive, negative, and control) as the independent variables and implicit stress mindset as the dependent variable. Also, a correlation analysis will be adopted to examine the relationship between SCMM & IAT scores. This study's results will contribute to the growing literature on stress mindset.

**Hunter Carlson** **Psychology**

***Switching to a Semi-Automatic P2 Selection Process to Improve Variability in the Blue Light FVEP-P2***

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Alzheimer's dementia (AD) is currently the leading form of dementia in the United States (Herbert, 2003). According to the 2000 consensus, AD will triple by 2050 resulting in 13.2 million suffering from this debilitating disease. An early effect of AD is the loss of cholinergic neurons in the visual system. Previous research conducted by our laboratory has demonstrated that the latency of the flash visual evoked potential-P2 (FVEP-P2), which is a component of an EEG waveform produced by a strobe flash, is sensitive to AD related pathology. Unfortunately, the variability associated with the latency of the FVEP-P2 is too large for the FVEP-P2 latency to be of clinical value. Hence, the purpose of the



present investigation is to develop a novel procedure for the acquisition and identification of the P2 that would reduce the natural variability of the P2 latency. This was accomplished by employing a semi-automatic algorithm on existing data for the detection of the P2. The more commonly used automatic algorithm has proven to be less than reliable when short wavelength light is used; so by using the semi-automatic approach for blue light, we may be able to reduce the variability enough to reach significance. Short wavelength light is thought to produce a more reliable and valid P2 than the commonly used white light. Preliminary findings will be discussed.

**Shannon Cole**

**Psychology**

***Effects of Adaptive Sequencing on Retention for Butterflies***

**Co-Author(s): Dan Yagci, Kim Hamilton**

Faculty Mentor(s): Lisa Blalock, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Spacing practice has considerable benefits for learning over massing practice (Cepeda et al., 2006). Spacing is beneficial due to interleaving items, promoting discrimination across categories or exemplars particularly when learning visual categories (Kornell & Bjork, 2008). Typically, spacing intervals are fixed and are not adapted based on performance. In adaptive training, one or more aspects of a learning task change based on learner performance or aptitude (Landsberg et al., 2012). We examined how adaptive sequencing (AS) and visual discrimination during training improves learning of identify butterfly species in a flashcard task. We used the adaptive response-time-based sequencing (ARTS) algorithm to adaptively space items in the flashcard deck. This algorithm uses accuracy and reaction time to change the priority of items in the deck; items answered quickly and correctly are moved to the bottom of the deck while incorrect items are moved earlier (Mettler & Kellman, 2014). We had predictions: (1) AS combined with visual discrimination will lead to better short- and long-term retention; (2) AS with visual discrimination will show better transfer of learning; and (3) trained items will show better memory performance compared to an untrained category. We trained undergraduate psychology students using a 2 (training type: AS vs. random spacing) x 2 (training format: name vs. picture compare) factorial design using a pre-post-transfer procedure. Participants were tested immediately after training and one week later to evaluate long-term retention of items. We expect to see the best performance with AS combined with the picture comparison format during training.

**Julia Cornish**

**Psychology**

***Can the Conceptualization of Organ Donation as a Social Dilemma Encourage Solutions?***

Faculty Mentor(s): Sherry Schneider, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Due to the increase in antibiotic resistance of many disease-causing pathogens, there is a growing demand for novel antimicrobial drugs. In our previous studies, cyclohexanol and a halogen (bromine and chlorine) containing benzo[b] thiophenes exhibited potent antimicrobial activity against Gram-positive bacteria, including *S. aureus* using microdilution assay which provides the

information about minimum inhibitory concentration (MIC) of the antimicrobial compound. However, the microdilution assay provides an end-point result which does not provide enough information about the antimicrobial activity. The proposed time-kill assay will further develop our understanding of the kinetics of killing bacteria by evaluating bacterial growth at different time points at several concentrations of the benzo[b]thiophenes<sup>2</sup>. Thus, performing time-kill assays will provide a broader range of information, such as time and concentration dependency of our antimicrobial compounds against *S. aureus*<sup>2</sup>, while enhancing our understanding of the mode of action of benzo[b]thiophenes as bactericidal or bacteriostatic.

**Julia Cornish**

**Psychology**

***Validation of the Visual Analog Mood Scale in an Adolescent Autism Population with Limited Receptive Language***

**Co-Author(s): James Arruda, Vanessa Rainey, Christina Pellow**

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Due to the inability to communicate effectively, there is concern that individuals with autism and limited language are experiencing internal negative mood states such as depression without treatment. There is an absence of psychometric assessment options for individuals with a lack of receptive language skills. The current standard for assessing emotional state is the Profile of Mood States (POMS); however, the test uses a Likert Scale which can be difficult for individuals with a deficit in receptive language to comprehend. The purpose of this research is to expand the usability of the Visual Analog Mood Scales (VAMS) as an optional assessment of transient mood state for adolescents with limited language on the autism spectrum. The VAMS are an established psychometric measurement for adults with a lack of expressive language. The VAMS have been successfully administered to patients that have had electroconvulsive therapy, dementia, stroke, neurological impairment, as well as bilingual pain patients. The VAMS internal consistency reliability have Cronbach Alpha measurements ranging from .82 to .93 for these populations, suggesting the VAMS can bridge the lingual gap in adult groups with limited language. Before administering any internal mood testing, we will assess the adolescents' receptive language using the Peabody Picture Vocabulary Test – 4th edition. We will test the POMS 2-Y and the VAMS across two sessions in counterbalanced order to assess the validity and test-retest reliability. While researching the efficacy of the VAMS, we will make observations about the individuals' experience during testing. Information may refine future treatment approaches.

**Julia Cornish**

**Psychology**

***Effects of Elopement Restraints on Social Stigma for Adolescents with Autism Spectrum Disorder and Caregivers***

Faculty Mentor(s): Sherry Schneider, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

The purpose of this study is to assess public opinion on the use of restrictive equipment (harness and leash or vest and tether system) among adolescents with special needs to determine if social stigma escalates when using restrictive

devices. Over half of all individuals with autism have elopement (escape) behaviors before the age of 14. Our assessment is meant to provide parents with a wider range of researched options and a foundation for research regarding the use of child harnesses. Participants will assess one of four pictures: an adolescent in a harness while his caregiver is holding a leash, an adolescent in a harness with a tether that connected the caregiver and the adolescent, an adolescent in a vest with a tether that connected the caregiver and the adolescent, and a picture with no restrictive equipment. Participants are asked to express their perception of the situation in order to evaluate the impact restrictive equipment has on increasing or decreasing social stigma. We hope to see a decrease in social stigma from the harness to the vest and perhaps an increase in interest in the use of the vest. Forty percent of parents with special needs children report being socially isolated and avoiding social activities because of social stigma. The stress of social stigma is extremely harmful to mental and physical health. We hope to help parents minimize escape behaviors while allowing families to participate in a wider range of activities even when there is a high risk of elopement.

**Jasiana Edwards**

**Psychology**

***Mindful Nest***

**Co-Author(s): Ashli Barnes, Hannah Ledford**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: High Impact Practice (HIP) Showcase

**Kristina Goode**

**Psychology**

***Deterioration of the Magnocellular Pathway as a Biomarker for Alzheimer's Early Detection***

**Co-Author(s): Sophia Giddens, Julia Cornish**

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Alzheimer's dementia (AD) is a progressive neurodegenerative brain disorder characterized by a severe memory impairment and eventual cognitive decline. According to the Alzheimer's Association (2017) between 2000 and 2014 there has been an 89% increase in deaths due to AD, and the number of diagnoses is expected to rise as the baby boomer generation ages. Not surprisingly, researchers and clinicians are interested in developing biomarkers that would allow for the early detection and diagnosis of AD. One potential candidate is the flash visual evoked potential-P2 (FVEP-P2). The FVEP-P2 is the second positive component of a waveform produced by the presentation of a strobe flash. It has proven to be sensitive to the decline in cholinergic functioning, which is often the hallmark of AD. Unfortunately, the variability associated with the FVEP-P2 latency is unacceptably high to be used as a biomarker. Tzekov and Mullan (2012) noted AD is linked to cholinergic functioning and deterioration of the optic nerve, the retina, and the ganglion cells. The present research was designed to reduce the variability of the FVEP-P2 latency by increasing the sensitivity of the magnocellular (i.e., cholinergic) system using dark adaptation and specific color filters designed to maximize the 498 nm wavelength. Preliminary findings will be discussed.

**Cayla Hartley**

**Psychology**

***Let's Get Technical: A Future-Oriented Job Analysis of a Simulator Technician for the University of West Florida's School of Nursing***

**Co-Author(s): Kenzie Hurley, Matheys Rohde, Kaylin Strong**

Faculty Mentor(s): April Schantz, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

The University of West Florida's Society for Human Resource Management project team conducted a future-oriented job analysis of a simulation technician position for the School of Nursing. A future-oriented job analysis includes gathering, documenting, and analyzing detailed information about the responsibilities, duties, skills, and work environment of a specific job. This analysis is then used as an aid to help an organization develop an understanding of future jobs and provide valuable feedback. Following the framework outlined by Landis, Folgi, and Goldberg (2002), our process consisted of: (1) gathering background information on the School of Nursing and related positions from various sources, (2) interviewing subject matter experts, (3) developing task statements and identifying the knowledge, skills, abilities, and other attributes required by incumbents in this position, and (4) analyzing this data and presenting the results to our client. The information gathered from this job analysis would allow for the creation of an accurate job description specific to the needs of the School of Nursing Simulation Lab. An accurate job description is essential for recruitment and selection, performance analysis, training, and compensation. If the position were formally posted and filled using our evidence-based job description, the selected applicant would meet essential knowledge, skills, and abilities for support of the School of Nursing faculty and simulation training experiences for UWF Nursing students.

**Kenzie Hurley**

**Psychology**

***The Influence of Stockholm Syndrome in Reporting Sexual Harassment: A Theoretical Framework***

**Co-Author(s): Fiana Mastrangelo, Helena De Oliveira**

Faculty Mentor(s): Valerie Morganson, Psychology

Lead Author Department: Psychology

Session: Main Oral Presentation Session

Prevalence studies suggest the persistence of sexual harassment (SH) in many workplaces; specifically, American estimates indicate that 40-75% of women and 13-31% of men have experienced SH (Aggarwal & Gupta, 2000). This is especially a problem because targets of SH have been shown to experience a range of significant psychological and job-related outcomes (McDonald, 2012). Research also consistently demonstrates that reported SH is only the "tip of the iceberg," (McDonald, 2012; p. 9) with only 5-30% of targets formally reporting SH. This low volume of reporting has been related to women tending to show special concern about "protecting the person who bothered her" (Jensen & Gutek, 1985; p. 129), which is especially prominent in instances where the perpetrator is a supervisor. Other than research on organizational power (Vijayasiri, 2008), not much information exists about why targets of SH are less likely to report abusive supervisors in comparison to colleagues. One likely explanation that the literature does not examine is how much of a role sympathy for the perpetrator, otherwise known as Stockholm Syndrome, may play in hindering the target's

likelihood of reporting SH. Therefore, this project employs Stockholm Syndrome as a theoretical framework and inhibitory factor of reporting SH by describing the characteristics of abusive relationships, the reasons why SH is not reported, and how the characteristics of such relationships and reasons for not reporting SH are related to the concept of Stockholm Syndrome. The potential implications of this research will be discussed in terms of theoretical and practical contributions.

**Kenzie Hurley**

**Psychology**

***(Back to the) Future-Oriented Job Analysis: Examining a Potential Data Analyst Position for the Usha Kundu, MD College of Health***

**Co-Author(s): Matheus Rohde, Cayla Hartley**

Faculty Mentor(s): Valerie Morganson, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

As part of a class (high impact practice), a graduate student team partnered with the Usha Kundu, MD College of Health (UKCOH), to conduct a future-oriented job analysis of a potential data analyst position. Future-oriented job analysis is a systematic process of gathering, documenting, and analyzing detailed information about the responsibilities, duties, skills, and work environment of a specific job. This analysis is then used as an aid to help an organization develop an understanding of future jobs and provide valuable feedback (Landis, Fogli, & Goldberg, 2002). Overall, our process consisted of: (1) gathering background information on the UKCOH and related positions from various sources (e.g., O\*NET), (2) interviewing subject matter experts (e.g., individuals in similar research positions outside of the University of West Florida), (3) developing task statements and identifying the knowledge, skills, abilities, and other attributes required by incumbents in this position, and (4) analyzing this data and presenting the results to our client. The information gathered from this job analysis can facilitate creation of an accurate job description specific to the needs of the UKCOH. An accurate job description is essential for recruitment and selection, performance analysis, training, and compensation. Job analytic results can provide more justifiable and targeted assistance to the UKCOH, which, in turn, benefits students, faculty, and the University of West Florida.

**Dean Jones**

**Psychology**

***Market Analysis of Parachute Descent Training Simulators***

**Co-Author(s): Cayla Hartley, Kaylin Strong, Kenzie Hurley, Steven Kass, Matthew Pierce, Beth Atkinson, Lee Sciarini**

Faculty Mentor(s): Valerie Morganson, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Aviation Survival Training Centers (ASTCs) use virtual reality parachute descent training simulators to train aircrew on correction of parachute malfunctions, standard parachute descent procedures, steering, and decision-making. However, current Parachute Descent Procedure (PDP) training utilizes out-dated technology with inadequate realism and inability to interface with standard flight and parachute equipment, limiting training effectiveness. The proposed poster reviews parachute descent training simulators to identify and evaluate available systems for the Naval Aviation Survival Training Program (NASTP). The review includes strengths, weaknesses, and costs of 15 parachute descent training

simulators. By providing this information, our market analysis is intended to benefit United States Navy (USN) warfighters by identifying optimal training technologies to meet their specific training needs. Additionally, this market analysis provides information to lead a more detailed evaluation of two virtual reality parachute descent simulators (e.g., Skyfall and Parasim) to optimize parachute descent training as part of the NASTP.

**Renee Lord**

**Psychology**

***Bridge 2 Home***

**Co-Author(s): Kristen Bain**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: High Impact Practice (HIP) Showcase

**Fiana Mastrangelo**

**Psychology**

***The Effects of Improv on Social Anxiety in College Students: Workshop Intervention Treatment***

**Co-Author(s): Sierra Hobbs**

Faculty Mentor(s): Jane Halonen, Psychology

Lead Author Department: Psychology

Session: Main Oral Presentation Session

The Anxiety and Depression Association of America estimates that 18.1% of the adult population lives with an anxiety disorder, and with the rise of the global loneliness epidemic, the management and treatment of anxiety disorders becomes an ever-important focus of study. Individuals who suffer from social anxiety disorder (SAD), experience a “persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others,” (American Psychiatric Association, 2013). Individuals with SAD may then experience a positive feedback loop in which their fear of social situations may decrease their willingness to engage in social activities, which then increases feelings of loneliness and social isolation. Drama therapy has long been used as an alternative form of therapy, and research has found that drama therapy has helped reduce symptoms of SAD over the course of several classes. Literature on the effects of improvisation classes on SAD indicates that improvisation may help alleviate symptoms of SAD in participants (Sheesley, Pfeffer, & Barish, 2016). We hypothesize that a one-time intervention improvisation workshop with a focus on overcoming SAD will show an improvement in healthy college students’ self-reported symptoms of SAD. This study will utilize a pretest and posttest survey in which participants will identify symptoms of SAD that they experience in everyday life and the methods that they employ to manage these symptoms. We will also distribute a follow-up survey to determine if the effects of a one-time intervention are temporary or lasting.

**Hannah Mock**

**Psychology**

***Biomarkers for Executive Function: Examining Proactive and Reactive Control in Emerging Adults***

**Co-Author(s): Jamie Adkinson, Cassidy Paige**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

The purpose of this study is to examine how emerging adults (i.e., age 18-25) deal with conflict control, an aspect of decision making, and how this affects their performance on physiological measures (i.e., electroencephalography; EEG) and self-report measures of control. Conflict control falls under the umbrella term of executive function, or our ability to control and filter information so that we can properly absorb information in our environment. Deficits in this area are seen with disorders such as attention-deficit hyperactivity disorder (ADHD), thereby, affecting one's ability to learn. Emerging adulthood is an important age group to examine due to the plasticity of the prefrontal cortex, where executive function processes happen, which develops until age 25. To examine conflict control (i.e., the ability to deal with conflicting and irrelevant information), the current study will be closely examining two types of conflict control: proactive (i.e., planning ahead to react to incoming stimuli) and reactive (i.e., making decisions as the conflict occurs) control (Appelbaum et al., 2014) using a modified Stroop task. Research is needed to understand potential biomarkers for executive dysfunctions and how easily differences can be detected through self-report measures.

**Hannah Mock** **Psychology**  
***Connections Between Language Brokering Frequency and Empathy in College Students***

**Co-Author(s): Katerina Zatopkova, Ashli Barnes**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Previous research studying language brokers (i.e., children and/or adolescents who informally translate for family members) has indicated a positive correlation between frequent language brokering and gains in prosocial capabilities, such as perspective-taking and empathy. The purpose of the current study was to examine how college students' (N=375) frequency of brokering correlates to empathy, measured using the empathetic concern, perspective-taking, and personal distress subscales of the Interpersonal Reactivity Index. Analyses revealed a positive correlation between perspective-taking and empathic concern,  $r=.517$ ,  $n=357$ ,  $p.001$ , and a negative correlation between perspective taking and personal distress,  $r=-.133$ ,  $n=357$ ,  $p=0.012$ . Overall, increases in perspective-taking correlate with increases in empathic concern, but perspective-taking weakly correlates with decreases in personal distress. There was no correlation between language brokering frequency and empathy. Using a post hoc analysis of gender and language brokering, women were found to be more likely to broker along with having more empathic concern.

**Claney Outzen** **Psychology**  
***Associations between Environmental Contexts and Preschoolers' Effortful Control***

Faculty Mentor(s): Kimberly Day, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Preschoolers spend the majority of their time in their home environment. During this time, they begin to develop their effortful control, which is mindfully changing a behavior to achieve a goal or plan (Eisenberg et al., 2011), and can predict children's academic achievement (Ursache et al., 2012). The purpose of this study was to examine how four contextual factors may be associated with effortful

control, including home chaos (i.e., noise, crowding, lack of routine; Matheny et al., 1995), maternal stress, maternal social support, and parenting strategies.

**Madison Rayfield** **Psychology**  
***Spring 2020 The Development in Children with Medical Needs***

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: High Impact Practice (HIP) Showcase

**Sherry Schneider** **Psychology**  
***Can Conceptualizing Public Health Problems as Social Dilemmas Suggest Solutions?***

**Co-Author(s): Hunter Carlson, Julia Cornish, Mary Anne Evertz**

Faculty Mentor(s): Sherry Schneider, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

A problem is defined as a social dilemma when short-term self-interest is at odds with long-term collective good. Since Hardin's (1968) seminal article in Science, research in the social sciences has identified potential solutions to these mixed-motive problems (e.g., Van Lange, Joireman, Parks, & Van Dijk, 2013). There are four current public health problems that may benefit from framing as social dilemmas: blood donation, antibiotic resistance, organ donation, and vaccination. While there is a massive amount of research on each of these issues, the goal of this poster is to bring the theories and experimental paradigms associated with social dilemmas to bear in the public health domain. For example, a longitudinal study on self-commitment and continued blood donation have possible implications on future organ donation (Harris & Shanteau, 1993). Recent research suggests that there is also an association between trust and the individual's willingness to reduce their antibiotic use. Other research (Betsch, Bohm, & Korn, 2013) found that communicating the social benefits of vaccination to participants could prevent free-riding. This poster will share a systematic approach to these health dilemmas which will be used to develop and test hypotheses experimentally and in the field.

**Jessica Steele** **Psychology**  
***Effects of Blue Monochromatic Light on the Variability of the FVEP-P2***

**Co-Author(s): Madison McInnis**

Faculty Mentor(s): James Arruda, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

As the prevalence continues to increase there is now more than ever a call for researchers to discover a reliable and valid measure of diagnosis for Alzheimer's dementia (AD). The clinical utility of the flash visual evoked potential P2 (FVEP-P2) has been shown to distinguish groups of AD patients from healthy controls. The FVEP-P2 is a measure of cholinergic functioning within the brain, which is impaired in those with AD due to the decline in acetylcholine (ACh). The latency of the P2 after the presentation of a strobe flash is what is said to be diagnostic. Despite its utility, there still exists too much variability in the P2 latency to use it as a clinical diagnostic tool. In this investigation the color of light was manipulated used in the strobe flash (Blue and White) and also manipulated



the EEG data analysis (Corrected or Uncorrected). Healthy individuals (N=24) were recruited and utilized in this study. Results indicated, despite previous research suggesting blue light would reduce the variability, that there is a rise in variability (though not significant) in both amplitude and latency of the P2 under blue light conditions. This suggests that white light is still the best means of eliciting the P2. Additionally, when EEG data were corrected for artifact it also had a trend to increase the variability of latency and amplitude with blue light, though white light was slightly reduced. These results indicate the best method for eliciting the P2 is with white light and leaving data uncorrected.

**Kaylin Strong**

**Psychology**

***Let's "Band" Together: Job Analysis for Director of Athletic Bands***

**Co-Author(s): Jonathan Griffin, Ella Mcleod, William Carter**

Faculty Mentor(s): Valerie Morganson, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

As part of our Selection and Appraisal graduate course in the Industrial-Organizational Psychology Master's program, we partnered with the UWF Music Department to conduct a job analysis for the Director of Athletic Bands position. Job analysis is a multifaceted process that provides valuable information to guide organizational practices. Whether an organization is developing a new position, reworking an old position, or simply wishes to re-evaluate its selection procedures, a thorough job analysis will enable managers to identify the most suited candidates and accurately define the expectations of the position to be filled. In addition, the information provided in a job analysis is utilized to guide training procedures and recruitment, identify the best candidates for promotion within the organization, and ensure legal stability by clearly defining the guidelines for selection decisions. Our job analysis is specifically focused on the potential expansion of the Director of Athletic Bands position at UWF. The process of our job analysis consists of four phases which include gathering background information through research, interviewing subject matter experts within and outside UWF, compiling a comprehensive list of knowledge, skills, abilities (KSAOs) and task statements, analyzing KSAO questionnaire data, and finally providing our client with a technical report and presentation of our findings. Our job analysis will benefit the music department as a whole and the current athletic band as it continues to grow.

**Pierce Taylor**

**Psychology**

***Help Kangaroo Rue Escape the Zoo***

**Co-Author(s): Kayley Hepworth, Rebecca Vaughan, Lydia Harley, Taylor Pettitt**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: High Impact Practice (HIP) Showcase

**Kirsten Traynor**

**Psychology**

***Nursing Simulation: A Review of the Literature***

Faculty Mentor(s): Jill Van Der Like, School of Nursing

Lead Author Department: Psychology

Session: Main Poster Session

Much of nursing education relies on the ability of students to translate what they read in books to interactions with other people. For the students in the Bachelor

of Science in Nursing program here at UWF, as well as many other accredited programs, practicing the application of their knowledge comes first through simulation. Simulation at UWF takes the form of high-fidelity mannequins that are used throughout the four-semester program to simulate both common and uncommon problems that nurses may experience in a clinical setting. Examples of these problems include: childbirth and postpartum care, heart attacks, and code blues. Students are expected to respond to these events the same way that they would respond in a clinical setting in order to increase the credibility of the process. The purpose of this literature review is to research how effective simulation is at preparing nursing students for work as registered nurses in clinical settings after graduation. There is currently a large amount of literature showing the utility of technology in the classroom including how simulation mannequins can be utilized for nursing education. We are hoping to be able to find evidence regarding the use of simulation efforts as they help students translate their knowledge, skills, and abilities to real world scenarios, and if needed, to determine the need for future projects in this area.

**Rebecca Yates**

**Psychology**

***Relearning the Snake***

Faculty Mentor(s): Jasara Norton, English

Lead Author Department: Psychology

Session: Main Poster Session

During the Fall 2019 semester, I, Rebecca Yates, worked underneath Ms. Jasara Norton in her Nature of Writing (IDH4031) class as part of the Kugelmann Honors Program curriculum. As a class project, I conducted research on the origins and impact of how snakes have been symbolically depicted throughout history. These depictions are described in the ways of symbolism, cultural values, propaganda, and relating literature. These depictions, mostly quite sour, have bled into modern day perceptions of snakes. With a large majority of the population feeling anxious or hatred toward snakes, there is little cultural movement regarding the rapidly declining snake populations. Literature has a huge impact on science, after all, the humanities have been the primary reason for the hatred of the snake (through religion, symbolism, etc.). My ultimate message is that the humanities could also be the snake's saving grace. Snakes are continuously underrepresented and misunderstood within the American society. My research regarding this topic hopes to change people's minds about snakes and suggest the way in which we can do that: encouraging more positive depictions in our humanities so that future generations may have a different relationship with these amazing creatures. Being able to present at the Student Scholar's Symposium would be a great opportunity for me to showcase my work and learn more about how to interact with people at conferences. My poster presentation would be a unique addition, especially since it would be a humanities-focused topic in a primarily STEM showcased event.

**Zachary Yount**

**Psychology**

***Comparing Route Learning in Drivers using Conventional Navigation Assistance Devices and a Hypothetical Augmented Reality System***

**Co-Author(s): James Arruda**

Faculty Mentor(s): Steven Kass, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

## PUBLIC HEALTH

Current trends point towards the development and implementation of augmented reality navigation assistance systems for drivers in the near future. Previous research has found augmented reality can benefit driving performance, but the impact of augmented reality on route learning, also known as spatial knowledge acquisition, has received less attention. The current study used simulated driving scenarios to determine how the type of navigation aid device used (i.e., paper map, electronic map, and augmented reality system) affected driving performance and route learning. Route learning was examined at three levels: landmark, route, and survey. The hypotheses tested were that augmented reality would lead to an improved driving performance, but diminish route learning compared to paper map use that augmented reality would outperform electronic map use in both driving performance and route learning; and that drivers with relevant expertise and novices would be differently affected. Results indicated that driving performance and route learning are roughly equivalent when using either the electronic map or augmented reality. Paper map use resulted in poorer driving performance and greater route learning, but map recognition may be a confounding factor in higher level spatial knowledge acquisition with paper map use. Differences were not found between expert and novice drivers.

**Katerina Zatopkova**

**Psychology**

### ***The Presence of Motivation: The Impact of Language Brokering Frequency and Academic Motivation and Learning Strategies in College Students***

**Co-Author(s): Ashli Barnes**

Faculty Mentor(s): Vanessa Rainey, Psychology

Lead Author Department: Psychology

Session: Main Poster Session

Previous research studying language brokers (i.e., children/adolescents who translate for family members) has indicated a positive correlation between frequent language brokering and gains in cognitive development. However, there is evidence documenting elevated levels of anxiety in brokers, which may undermine cognitive developments. The purpose of this study was to (1) examine how the (N=549) anxiety levels from childhood would independently predict academic motivation and learning strategies in college, and (2) examine how anxiety levels would interact with frequency of brokering. Specifically, language brokering frequency is predicted to have independent positive relationships with academic motivation and learning strategies. Language brokering frequency is expected to have a positive relationship with anxiety levels. The interaction between language brokering frequency and anxiety is expected to interfere with academic motivation and learning strategies. Participants responded to the Penn State Worry Questionnaire (PSWQ), the Motivated Strategies for Learning Questionnaire (MSLQ), and a language brokering frequency scale across developmental timepoints. Our hypotheses and support from previous articles were both supported and negated. While a relationship between language brokering frequency and anxiety and learning strategies was not indicated, a significant relationship was found between language brokering frequency and academic motivation and some of its subcomponents. Rooted in Bronfenbrenner's Bioecological Systems Theory, these findings help to more directly understand the context of the language broker in emerging adulthood in higher academia and the impact on cognitive outcomes during this important transition into adulthood.

**Rose Belony**

**Public Health**

### ***Evaluating Community Preparedness: Lean on Me - Escambia***

Faculty Mentor(s): Justice Mbizo, Public Health

Lead Author Department: Public Health

Session: Main Poster Session

Background: The Lean On Me Project is coordinated by the Department of Health in Escambia County to increase confidence and autonomy in people with special needs during Disasters. This study examines the level of preparedness for disasters among Florida special needs registered individuals in Escambia County.; Methods: A cross-sectional study was conducted to examine the level of preparedness for disasters among Florida special needs registered. Frequency, cross-tabulation, and Chi-squared test were conducted using SPSS. Results: The majority of the population was white (60.5%), female (58.1%), single (48%), had mobility issues (67.4%), and all of them reported currently taking prescribed medications. We did not find statistical associations between feelings prepared to evacuate and has a go bag, has documents ready, has a medication list, has a backup plans, has a contact list, has a pet, has transportation, has food and water, and has an emergency plan. However, we found significant associations between feeling ready to evacuate and having transportation. Conclusion: The results of the current study indicate the need for additional research using stronger study designs and survey questions. Future research also might seek to predict household or participants preparedness by exploring other variables such as the role support systems have in readiness for individuals with special needs, perceived risk, expectations of power outages, and previous disaster experience.

**Sonia Filipczak**

**Public Health**

### ***Regional and Racial Disparities in Emergency Department Boarding Time among Patients with a history of Stroke and Heart Disease***

**Co-Author(s): Alireza Taghi, Anthony Okafor**

Faculty Mentor(s): Justice Mbizo, Public Health

Lead Author Department: Public Health

Session: Main Poster Session

Patient wait time in the emergency room can result in delayed care and potential complications for patients with a history of chronic diseases. The study seeks to determine the role of patient level factors, patient history of other chronic conditions, and history of substance use that contribute to the length of waiting differ based on the patient demographic, day of the visit, patient history of diagnoses. Methods: We analyzed data for 52, 512 adults ages 18 and above from the 2014 to 2017 National Hospital Ambulatory Medical Care Survey. The data were merged, weighted and analyzed using STATA 15.1 for windows. In addition to univariate frequencies and Chi-square distributions, we performed adjusted multinomial logistic regression to estimate the risk of extended ER boarding time. We used Alpha 0.05 for all significance levels. Results: The mean age was 46.7 (SD=19.7), 22.8 % African American, 13.3 % Hispanic, and 61.3% Non-Hispanic whites. Only 18.1 % of the patients arrived by ambulance; 7.5% had known history of substance abuse. Majority of the hospitals were in metropolitan areas (83.7%) vs rural (16.3%). Sex, age group, and race were significantly associated with

boarding time at the bivariate level ( $p < 0.05$ ). African American (OR=1.42; 95%CI: 1.17 -1.71;  $p < 0.001$ ) and Hispanic (OR=1.32; 95%CI: 1.10 -1.62;  $p < 0.01$ ) patients with heart disease and stroke were significantly more likely than whites to experience longer boarding times (120minutes). Similarly patients in Metropolitan areas were 32% more likely to be boarded for greater than 120minutes (OR=1.32;  $p < 0.01$ ) than those in the rural area.

**Krista Guy**

**Public Health**

***Seasonal Influenza Vaccine Use in Adults Without Major Chronic Diseases: Evidence from the BRFSS Data***

Faculty Mentor(s): Justice Mbizo, Public Health

Lead Author Department: Public Health

Session: Main Poster Session

Among the significant public health accomplishments of the past century are vaccines against both viral and bacterial diseases that pose considerable disruption. Persons without chronic conditions such as cardiovascular disease, metabolic syndrome, lower respiratory conditions (COPD, asthma) are usually not the target of public health messages regarding influenza vaccine uptake. Infectious pathogens such as the COVID-19 virus with a long incubation period and the ability to remain in circulation within the population among otherwise healthy individuals require a shift in strategy. Public health professionals must now reconsider vaccine deployment strategies to include segments of the population in the non-risky groups. Understanding attitudes and behavioral factors contributing to the uptake and mistrust of vaccines is critical to public health efforts in tailoring prevention messages and implementation prevention and control measures during public health emergencies. The objective of the study is twofold; 1) to determine seasonal vaccine uptake among otherwise healthy adults, and 2) determine the individual level and health systems related factors that influence seasonal vaccine update among otherwise healthy adults. Methods: Data for 415,000 adults from the 2018 Behavioral Risk Factor Surveillance Survey (BRFSS). We excluded from our analysis any respondents with diagnosed heart failure, stroke, COPD, cancer, rheumatoid arthritis, and diabetes. Results: In addition to descriptive statistics, including mean (SD) for continuous variables, Chi-square frequencies, and adjusted OR [95% CI] will be reported. We used Alpha 0.05 for all significance levels. Strategies for increasing immunization among healthy individuals.

**Brigette Robinson**

**Public Health**

***An Analysis of the Relationship between Psychological Stress and Temporomandibular Joint Pain***

**Co-Author(s): Scott Eckhart, Ilda Sans Peur, Margret Wisdom, Samantha Seals**

Faculty Mentor(s): Daudet Ilunga Tshiswaka, Public Health

Lead Author Department: Public Health

Session: Main Poster Session

The temporomandibular joint (TMJ) is a typical location to see chronic pain and has been clinically linked to the perceived stress of individuals. This study investigates the relationship between various types of stress and TMJ pain. Using responses from selected questions on the 2015 National Health Interview Survey (NHIS), both descriptive and binary logistic regression analyses were performed on three stressor categories (job-related stress, financial stress, and depression-

type stress) and the presence of TMJ pain. The findings indicated that 4.4% adults in the United States self-reported TMJ pain. Of those with TMJ pain, 6.2% had a job interference stress, 9.9% were very worried about bills, and 17.4% reported a feeling of hopelessness all the time. As age increases, the odds of experiencing TMJ pain decrease (OR= 0.996;  $p < 0.0001$ ). After adjusting for demographic factors, as stress levels increase, the odds of TMJ pain also increase ( $p < 0.0001$ ). This study establishes the need for a stress evaluation for all patients who present with TMJ pain. Additional studies should be performed to further evaluate this association with clinical studies that investigate TMJ symptoms in patients.

**Richard Stone**

**Public Health**

***A Spatial Analysis of Low-Income Communities in Pensacola to Determine Areas of Need in Relation to the Availability of Fresh Food and Transportation***  
**Co-Author(s): Jonathan**

Faculty Mentor(s): Denice Curtis, Public Health

Lead Author Department: Public Health

Session: Main Poster Session

One objective of Healthy People 2020 is to increase the proportion of Americans who have access to healthy food items (ODPHP, 2019). In conjunction with this objective, the USDA developed the Food Access Research Atlas which indicates that there are low access areas in the Pensacola Area (USDA, 2019). Determine if outside factors such as bus routes and smaller local grocery stores impact the status of those census tracts with limited access to food retailers. The study population was comprised of those residing in the 10 zip codes of Pensacola, FL. A spatial database comprised of census tract poverty status, food retailers, and Escambia County Area Transit bus routes was created using GIS software. Descriptive statistics were used to analyze the data from the overlay analysis. Three hundred and fifty three food retail establishments were identified with most being convenience stores (51.8%) and minor food outlets (22%). Eighty seven percent of fresh food retail establishments were within a quarter mile of the public transportation system, most being SNAP and WIC food retail participants. Thirty five percent of census tracts met the study's poverty guidelines, and a majority were in the vicinity of a fresh food retailer. Five low income census tracts were highlighted due to their low access to fresh food options and public transportation. Public transportation and smaller local grocery stores impact lower income communities' access to fresh food retailers, but further research is needed on ease of access to public transportation and food

---

## SCHOOL OF NURSING

---

**Eric Kennedy**

**School of Nursing**

***The Excremental Miracle Cure***

**Co-Author(s): Steven Rogers**

Faculty Mentor(s): Crystal Bennett, School of Nursing

Lead Author Department: School of Nursing

Session: Main Poster Session

In Ancient Rome, one peculiar medicinal remedy was the use of animal excrement. Through a historical lens, there were three sound reasons for why animal dung was used. Romans noticed that when applied to previously uncultivable fields,

crops would begin to grow; this observation led them to believe that fecal matter had restorative properties. This observation further led Romans to consider where dung obtained its remedial attributes. Observations of animals determined that since animals ate certain medicinal herbs, their excrement would retain the herbs' healing properties. Romans finally moved from observation to practice and found, through trial and error, the effects of excrement on the human body; which led them to positively believe in its medicinal abilities. By analyzing the use of animal excrement; in Ancient Rome the foundations of modern applications become apparent. Through advancements in technology the use of fecal matter as a medical treatment is becoming more common in the 21st century. The primary use of fecal matter is treatment of clostridium difficile (C.diff). Utilization of fecal matter transplant (FMT) to treat C.diff is considered effective. The purpose of this review is to explore; the effectiveness of FMT as compared to antibiotics to decrease risk of transmission to healthcare professionals during treatment. The incredible history of using fecal matter in medicinal treatment continues today, although with sound reasoning, in life-saving FMT.

**Ana Zwierewicz**

**School of Nursing**

***Self-care Education as a Means to Reduce Perceived Stress in Undergraduate Nursing Students***

Faculty Mentor(s): Cynthia Smith-Peters, School of Nursing

Lead Author Department: School of Nursing

Session: Main Poster Session

Background: The purpose of this study is to evaluate how undergraduate nursing students who have received education in self-care and self-compassion perceive stress compared to undergraduate nursing students who have not received the same education over a six-week period. Undergraduate nursing students consistently report feeling stress, anxiety, and depression (Jenkins et al., 2019). Literature shows a gap in licensed nurses practicing the self-care interventions they teach to patients (Ross et al., 2019). Methods: ~ 45 freshman nursing students were invited to participate. A randomized control study will allow students to participate in one of two groups - a control where no education will be provided; and an intervention group which will receive weekly intervention sessions regarding self-compassion and self-care over a six-week period. Themes of the program include healthy eating, regular exercise, and stress-reducing interventions. Results: Results will be measured at three periods using the Perceived Stress Scale: 1) before training is offered; 2) at three weeks of training; and 3) after the six-week training. The perceived stress levels of the control group and intervention will be compared. Conclusion: It is expected that the group that received education will show significant reduction in perceived stress levels as compared to the control group.

**Ana Zwierewicz**

**School of Nursing**

***Self-care Education as a Means to Reduce Perceived Stress in Undergraduate Nursing Students***

Faculty Mentor(s): Cynthia Smith-Peters, School of Nursing

Lead Author Department: School of Nursing

Session: High Impact Practice (HIP) Showcase

Background: The purpose of this study is to evaluate how undergraduate nursing students who have received education in self-care and self-compassion perceive stress compared to undergraduate nursing students who have not received

the same education over a six-week period. Undergraduate nursing students consistently report feeling stress, anxiety, and depression (Jenkins et al., 2019). Literature shows a gap in licensed nurses practicing the self-care interventions they teach to patients (Ross et al., 2019). Methods: ~ 45 freshman nursing students were invited to participate. A randomized control study will allow students to participate in one of two groups - a control where no education will be provided; and an intervention group which will receive weekly intervention sessions regarding self-compassion and self-care over a six-week period. Themes of the program include healthy eating, regular exercise, and stress-reducing interventions. Results: Results will be measured at three periods using the Perceived Stress Scale: 1) before training is offered; 2) at three weeks of training; and 3) after the six-week training. The perceived stress levels of the control group and intervention will be compared. Conclusion: It is expected that the group that received education will show significant reduction in perceived stress levels as compared to the control group.

## OTHER PROGRAMS



### KUGELMAN HONORS PROGRAM

**Nelly Arnett**

**Kugelman Honors Program**

***The Journey of BL Egerton 3088***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

This project asks specific questions about the medieval manuscript catalogued as British Library Egerton 3088 and one short text in it that originated in Rome c. 1150. The text itself is a record of the popes throughout history. The copy of it in BL Egerton 3088 was created in approximately 1243 by a Cistercian monk at Dore Abbey in England. This research aims to establish a timeline of owners for the manuscript, as well as finding out why it went to each different place/person. There are two major questions to answer in terms of this particular manuscript: where did the manuscript go after it was written in Dore Abbey, and why is the manuscript part of the "Egerton" collection? The answer to the first question may be found in what happened to Dore Abbey after the Dissolution of the Monasteries by Henry VIII. As for the second question, tracing the manuscript's owners backward from the most recent and searching for book collectors with the name "Egerton" within the timeframe may further illuminate the story. BL Egerton 3088 was bought and sold by numerous book collectors who primarily gathered similar manuscripts for the sake of collecting, rather than for the historical texts contained in the manuscript; for BL Egerton 3088, a text created by the monk Bede is what gave the manuscript value and not the record of popes focused on in this project.



**Cole Bailey** **Kugelman Honors Program*****Factors Affecting Activity Levels in College-Aged Students*****Co-Author(s): Alex Burns, Alyssa Canlas, Rosa-Michel Gibson, Sydney****Lederman, Stephen Schildberg, Ollie Warrensford, Dallas Snider**

Faculty Mentor(s): Andrea Nelson, Health Sciences and Administration

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

The activity levels of college-aged students are important to understanding the state of the health and wellbeing of this age group. To further discern the activity levels of this age group, a survey was created to assess the factors that influence their activity. Both biological and sociological aspects of activity have been assessed to create a well-rounded view of the subjects' states of being. The relationship between activity and the aforementioned factors will be found through the analysis of these surveys in relation to data found using the Actigraph GT9X. The Actigraph GT9X measures accelerative forces in the x, y, and z axes to determine the subjects' activity level. The data of the subjects will be compared to information assessed by the survey to discover correlations between the subjects' activity levels and the subjects' sleep, diet, demographic information, and perceived activity level. Through analysis of these two data sets, the researchers hope to discover the most pertinent factors that determine student activity levels in order to improve student health and wellbeing. Additionally, the researchers hope to understand what factors are detrimental to student activity levels.

**Mackenzie Bonds** **Kugelman Honors Program*****The Acquisition of Nicholas's Maniacucii's Text by Arnald Fitz Thedmar***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

Arnald Fitz Thedmar (1202-1274) was a wealthy man of England, responsible for the creation of the Chronicle of the Mayors and Sheriffs of London (1118-1274 AD), which today is conserved in the London Metropolitan Archive. This piece chronicles the prominent members of London's early civic government. However, tucked inside of the Chronicle is a piece by Nicholas Maniacucii, a Roman monk. Nicholas's text lists all of the popes to 1274 in the form of poetry, which is oddly out of place in Arnald's Chronicle. This project is centered on how Arnald came across Nicholas's work, of which thirteen medieval copies have been found. Arnald's acquisition is especially odd considering that all of the other copies have been found in the possession of churches or monasteries, not secular institutions. How he came across the piece, and perhaps why he chose to include it in his Chronicle is the basis for this project.

**Amanda Breeden** **Kugelman Honors Program*****A Quantitative Exploration of Social Face and Related Concepts Among College Undergraduates*****Co-Author(s): Kelsea Buck, Lindsey Casey, Danny Childress, Brianna Long, Trinity Oatts, Amanda Pietsch, Stephanie Rinehart, Ashton Thayer, Sarah Wright**

Faculty Mentor(s): Josh Schutts,

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session (2 posters)

Social face, fear of missing out, and social cohesion and trust (collective efficacy) have received more recent attention given the rise of social media in popular culture. Political skill and the personality trait of Machiavellianism also potentially influence the social relationships a person develops with others. This exploratory project investigated a sample of US college undergraduate to determine (1) if any relationships existed between these concepts, and; (2) if any differences existed based on demographic factors, self-reported social media usage, or time spent at social gatherings. Results may be able to identify social motivations and hindrances among college-age adults. College personnel and social science researchers may use these findings to develop programs geared toward social guidance and personal development.

**Lauren Brown** **Kugelman Honors Program*****Activity Levels of College-Aged Students Over A Week's Timespan*****Co-Author(s): Rachael Foretich, Tayyab Mughal, Rosemary Nguyen, Cassie****Owens, Melody Thai, Ke'Aundrix Ware, Dallas Snider**

Faculty Mentor(s): Andrea Nelson, Health Sciences and Administration

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

College students tend to have stressful lives, and the level of stress changes based on their major, financial status, and social activity levels. These factors can influence a student's activity levels based on different opportunities and abilities for physical activity under these circumstances. Many students correlate exercising as being active, but this research will show how college students are constantly active in various ways during their daily lives. The purpose of this research is to determine the factors that affect a college student's activity level through data collected via surveys and an Actigraph GT9X. Actigraph GT9X wearable sensors are used clinically to determine movement by measuring acceleration on the x, y, and z-axes. The participants are 15 college students attending the University of West Florida, who will remain anonymous. The students will wear an Actigraph on their non-dominant wrist for a week. The data will then be compiled and calculated to determine the relationships between activity level and daily factors, such as diet, mode of transportation, sleep, and other components collected through the survey. This research will allow for a better understanding of the activity level of college students and how specific factors may make them more or less likely to be active, and thus better understand the overall health of the students.

**Railey Conner** **Kugelman Honors Program*****The Use of Drones in Obtaining Political Objectives*****Co-Author(s): Andrew Palmer, Jackson Bare, Caleb Eastman, Kody Kimberl, Cody Morton, Corey Baughn, Hunter Hill**

Faculty Mentor(s): Donovan Chau, Research Administrations &amp; Engagement

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session/ Main Oral Presentation Session

Since 1982, drones have been realized as a powerful military and political tool rather than an unreliable and expensive novelty. The use of drones has increased greatly in the past few years and is only expected to increase. As this industry continues to grow and establishes its prominence in obtaining political objectives, it becomes necessary

to determine the effectiveness of drones and what capabilities they possess. This research project includes conducting research on specific state and non-state actors, analyzing the sources, and making a conclusion or assumption based on the research. In order to utilize time effectively, the group has been split into a team to research the state actors (state group), a team to research non-state actors (non-state group), and a team to oversee and analyze the credibility of sources and tie everything together (integration team). After completing the research portion, the information will be condensed and analyzed in order to answer the key questions. Are commercial drones effective in accomplishing political objectives, what is possible with a budget \$5,000 to \$20,000 USD, and is a non-attribution operation possible with commercial systems? This study serves to increase the body of knowledge on the use of drones in achieving political objectives in official state groups and unofficial non-state groups. With the expected increase in the drone market, drones will become more available and more practical globally, so it is crucial to recognize and analyze the threat now.

**Shane Durepo**

**Kugelman Honors Program**

***Judicial Information Project***

**Co-Author(s): Kat Barnette, Ragan Gates, Sarah Goldberg, Sara Akerman, Alexa Lasnaud, Rylee Buzbee**

Faculty Mentor(s): Heather Riddell, Communication

Lead Author Department: Kugelman Honors Program

Session: Main Afternoon Poster Session

Proposed by Judge Goodman from Santa Rosa County Juvenile Court, this project seeks to decrease juvenile delinquency by framing information for juveniles in a new, more informal manner and sharing said information on specialized social media accounts not affiliated with or endorsed by pre-existing organizations. The information being shared will be the laws most commonly broken among our younger demographic, the consequences of said laws, and additional information to attempt to remedy the reasons these laws are broken. Research on frequency of certain crimes, which gender tends to offend in particular ways, and how age correlates to juvenile crime will help shape our efforts. The two target demographics are middle school and high school students in Santa Rosa County as well as parents of these students. Additionally, we seek to educate parents about the obstacles their children face, how to help prevent crimes, and resources within the school and justice system. Our goal is that through targeted education, court cases and referrals for our younger demographic will decrease because of an increased awareness of the content of laws, consequences of crime, and proposed remedies to some of the causes of juvenile crime.

**Alexia Figueroa**

**Kugelman Honors Program**

***The Cloaca Maxima: A Revolution in Health and Drainage Practices***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

When most people think of sewer systems they think of sanitation and the removal of waste to improve the health of a city. However, were ancient sewer systems actually designed to improve health, sanitation, and safety concerns? Ancient sewer systems, such as the Cloaca Maxima in Rome, weren't created to improve factors of health and sanitation, but were merely a side effect of

managing clean, running water and the abundance of facilities that emptied into these ancient sewer systems. During antiquity, people didn't know what the impact was of using polluted water, and how it was harmful to their health and safety. Researching the sewers reveals that they did, ultimately by surprise, lead to better health standards; it also explains why the Romans chose to create sewer systems such as the Cloaca Maxima and what direct impact it had on Roman life. The Cloaca Maxima is the first and largest sewer system in the city of Rome, hence its name, the "greatest sewer." This paper will discuss why the Cloaca Maxima was made and how it was used for centuries to come. To be able to give examples and explain the significance and purpose of these ancient sewers, this paper will show research of latrines, public bathing, sewers, oral traditions, public figures, aqueducts, and waste disposal to show the changes through the years to accommodate and establish health and safety concerns and the purpose of the sewers through the centuries.

**Michaela Franklin**

**Kugelman Honors Program**

***Suicide Patterning in Florida's Medical Examiner District 1: Using Geospatial Data to Inform Forensic Recoveries of Suicide Scenes***

Faculty Mentor(s): Allysha Winburn, Anthropology

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

Suicide is one of the leading causes of death in the United States and is prevalent worldwide. Though there is no clear resolution to this deadly issue, any research into regional trends in suicide patterning could prove valuable to understanding its subtleties. Medical examiners and coroners compile records on deaths investigated within the medicolegal system, thus providing a resource for studying regional trends in where and how these deaths occur. Further, as medicolegal personnel are the people most frequently tasked with recovering and analyzing the human remains from these scenes, they stand to benefit from an enhanced knowledge of suicide scenes. In this study, we will collect data from the digital records of Florida's District One Medical Examiner on all suicides investigated by that office over the course of the past ten years (1540 cases), including: the location of the suicide scene (i.e., address or GPS coordinates); a qualitative description of the scene location (e.g., "within the home"); and the modality of the suicide (e.g., hanging). We will perform Geographic Information System (GIS) analyses of the geospatial data, producing a map of all suicide scene locations in Florida's District One from 2008-2018. Geospatial patterns in suicide modalities, scene descriptions, and overall landscape, if identified, will be analyzed (e.g., clustering of particular types of suicide scenes in urban vs. rural locales). The resulting geospatial data on suicide scene patterning will have the potential to assist medicolegal personnel with the effective location and processing of future suicide scenes in the state of Florida's District One.

**Jurnee French**

**Kugelman Honors Program**

***Tracing the Roots of BL Sloane 539***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

Despite the massive collection Hans Sloane, founding father of the British Museum, left behind after his death, very little is known of the manuscript numbered 539. Written by a monk in the twelfth century, the manuscript

## OTHER PROGRAMS

seems to have passed through many hands before finally falling into Sloane's sometime subsequently to his extended trip to Jamaica in 1695. Before this, Antony Haydocke owned the manuscript, and even less is known about him. An alumnus of Magdalen College, Oxford along with his brother, Richard, a well-known physician at the turn of the sixteenth century, Haydocke is the only and oldest link in the chain that currently ties to Sloane and the British Library, but the whereabouts of the manuscript between Haydocke and its creation has yet to be uncovered. Sloane is considered the founder of the British Museum following his death in 1753 after donating all 71,000 of his collected manuscripts to the museum, where the manuscript named "Sloane 539" has remained ever since. My research will mainly consist of researching the way in which Haydocke acquired this manuscript and, thus, how Sloane eventually came to acquire it, as well. Ultimately, I aim to consider how precious documents can be lost to history and follow the paper trail left behind to recover them.

**Rowan Freitas**

**Kugelman Honors Program**

***Connecting Undergraduate Disciplines through Caring for the UWF Community Garden***

**Co-Author(s): Ashlee Nigro, Devon Parsch, Theodore Reese, Grace Ward**

**Faculty Mentor(s): Jill Van Der Like, Nursing**

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

Across the globe, more and more communities have chosen to implement gardens in accessible areas for public use. This popular trend has opened conversations on the benefits of these community gardens. Our research team has decided to explore specifically the effects of these areas on the feelings of college-aged students. To do this, our research team will have willing participants experience The UWF Community Garden during one of the planned garden workdays. The DASS 21 questionnaire will be administered via Qualtrics before the gardening workday, and participants will verbalize one word for feelings after the workday. After acquiring this information, our research team hopes to see a correlation between a garden experience and levels of depression, anxiety, and/or stress. This information will then contribute to the discussions of the benefits of community gardens. In turn, our research team hopes this will bring awareness to The UWF Community Garden and others.

**David Hood**

**Kugelman Honors Program**

***Applying Spatial Syntax Analysis to Local Civic Structures: The Case of Historic Georgia Courthouses***

**Co-Author(s): Gabby Bowen, Kian Muldoon, Elizabeth Barrett**

Faculty Mentor(s): Jocelyn In The Statehouse, Charles T. Goodsell, a professor at the Center for Public Administration and Policy at the Virginia Polytechnic Institute and State University, presents a method for the classification of spaces within government buildings. These spaces, Government

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

When designing civic buildings, such as courthouses, there are two competing and necessary objectives. To truly embody the required aspects of a free, democratic society, the officials in the building need to be easily accessible by their citizens, and all official business must be easily observable by citizens.

Historically, civic buildings have conveyed democratic values through symmetry in design. Take the U.S. Capitol Building, for example. Working directly against this, however, is the need for the same officials to be safe from potential threats, and to have the ability to perform their duties without fear of interruption. Finding the balance between these two objectives is the goal behind the design of many civic buildings. Spatial Syntax Analysis (SSA) is a spatial software which identifies security, accessibility, indicators of a space and how it is used. In this method, we are able to gain an understanding of how these spaces are perceived and how these perceptions influence the feelings and behavior of those in them. This study focuses on the spatial syntax of historic courthouse architecture in Georgia, using the original floorplans of fourteen courthouses, in order to explore the effectiveness of spatial syntax analysis. We will also be analyzing the new and old Florida Capitol buildings. Our hypothesis is that the older buildings will show a less complex, and therefore more effective use of spatial syntax while newer buildings will show the opposite. We will create tree diagrams of each of the fourteen historic county courthouses to measure the effectiveness in terms of symmetry and accessibility. Following this analysis, we will explore changes in design over time with reference to spatial syntax.

**David Hood**

**Kugelman Honors Program**

***Applying Goodsell's Classes of Space to Local Civic Structures: The Case of Historic Georgia Courthouses***

**Co-Author(s): Gabby Bowen, Kian Muldoon, Elizabeth Barrett**

Faculty Mentor(s): Jocelyn Evans, Government

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

When designing civic buildings, such as courthouses, there are two competing and necessary objectives. To truly embody the required aspects of a free, democratic society, the officials in the building need to be easily accessible by their citizens, and all official business must be easily observable by citizens. Historically, civic buildings have conveyed democratic values through symmetry in design. Take the U.S. Capitol Building, for example. Working directly against this, however, is the need for the same officials to be safe from potential threats, and to have the ability to perform their duties without fear of interruption. Finding the balance between these two objectives is the goal behind the design of many civic buildings. Spatial Syntax Analysis (SSA) is a spatial software which identifies security, accessibility, indicators of a space and how it is used. In this method, we are able to gain an understanding of how these spaces are perceived and how these perceptions influence the feelings and behavior of those in them. This study focuses on the spatial syntax of historic courthouse architecture in Georgia, using the original floorplans of fourteen courthouses, in order to explore the effectiveness of spatial syntax analysis. We will also be analyzing the new and old Florida Capitol buildings. Our hypothesis is that the older buildings will show a less complex, and therefore more effective use of spatial syntax while newer buildings will show the opposite. We will create tree diagrams of each of the fourteen historic county courthouses to measure the effectiveness in terms of symmetry and accessibility. Following this analysis, we will explore changes in design over time with reference to spatial syntax.

**Logan Mastrandrea****Kugelman Honors Program*****Tourism and Industry of Florida Panhandle Maritime Landscape*****Co-Author(s): Genna Edwards, Taylor Perritt, Tucker McDonald, Hunter Rider, Molly Hayne**

Faculty Mentor(s): Sorna Khakzad, Reubin O'D. Askew Institute for Multidisciplinary Studies

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

The purpose of the overall Feasibility Study is to make the Florida Panhandle a dedicated Maritime Heritage Area and to preserve and describe the unique history and cultural, social, economic, industrial and environmental elements of the area. Our project research is dedicated to detailing the history and significance of tourism and industry to communities along the Panhandle, as well as on a national level. The methods used to complete this project included referring to pre-existing studies about the area and its history, using both primary and secondary resources, and conducting interviews with tourists, tourism councils, museum personnel, and experts in the fields of interest. This information was compiled and expressed both qualitatively and quantitatively as needed. This research strives to demonstrate the plethora of advantages that the history and industry of tourism, fishing, and lumber creates for the nation. Our work revealed that the Florida panhandle area has an abundance of history and a great number of unique, nationally significant natural and cultural attractions that can support the designation of a national title for the area.

**Kerrigan McConnell****Kugelman Honors Program*****An In-depth Look into the Connection between Nicolaus's Ad Inconrupta Pontificum Nomina Conservanda, BL Cotton Vespasian A.XVI., and Waverley Abbey***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

The text is Nicolaus's Ad inconrupta pontificum nomina conservanda. The name of the manuscript in which it is bound is BL Cotton Vespasian A.XVI. This manuscript contains one of at least thirteen copies of Nicolaus Manuatucii's text made between c.1150 and c.1400. This copy of the book of psalms originated in Waverley Abbey in Farnham, England. The purpose of this research project is to determine the origin of the Cottonian and British Libraries, as well as how the manuscript Cotton Vespasian A XVI came into Sir Robert Cotton's possession. Cotton's extensive library came from his love of antiquities and knowledge, which linked him to not only the political sphere of the time but other key people who would play a role in the amassment of his personal library. In-depth research with sources in the British Library and the National Archive should shed light on the era of the closure of the monasteries by King Henry VIII, and how the contents of the library at Waverley Abbey were dispersed.

**Emily Nicholson****Kugelman Honors Program*****The Burial Practices of the Orders in Roman Society***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

In ancient Rome, different orders of society lived differently and were buried differently. The two burial methods seen were inhumation, the act of burying a whole body, and cremation, the act of burning a body to ashes. The deceased of the lowest order of the Romans were tossed outside of the Roman walls to decompose in large pits. People of the middle order in Rome, commoners of some means, belonged to burial clubs that provided a funeral and burial in cemeteries, tombs, or mausolea after death. Families of the wealthiest order in Rome often had immense tombs for their family members and sometimes slaves; these tombs were alongside the roads leading into the city of Rome. The difference in the burial rituals for each order of ancient Roman society greatly reflects the social divide that these orders had and showcases overall how social status had an immense effect on the people of Rome, even after death. Whatever burial a Roman received greatly reflected the amount of wealth that the person and family possessed. The goal of this research is to understand the separation of the orders in ancient Roman society and to examine how this separation was just as important after death as it was in life. Studying burial practices in ancient Rome gives a new perspective on ancient Roman society.

**Lily Plum****Kugelman Honors Program*****Royal Influence on Architecture: the Palais de Justice, the Conciergerie & Sainte Chapelle***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

The focus of this research is the change of the structure and use of the Palais de Justice, the Conciergerie, and the Sainte Chapelle (12th - 19thcenturies) due to political influence. Prior to the existence of the Palais de Justice, the palace of the Capetian dynasty was constructed on the same site in the late 10thcentury. The site was established as a place of royal authority, a theme that continued with the French monarchy and its use of the Palais de Justice. During the reign of King Louis IX (1214-1270), the Palais de Justice housed the Parlement in the 13thcentury. The building underwent various reconstructions including the east wing due to fires in 1776 and 1871. The Conciergerie, previously a prison, still stands as a Paris courthouse. The revolutionary government imprisoned Marie Antoinette in the Conciergerie before her execution in 1793, creating a power shift from the monarchy to the people. The Sainte Chapelle, consecrated in 1248, held a collection of holy relics; those relics, in addition to many coronations and royal weddings held at Sainte Chapelle during the 14thcentury, continued the theme of royal power. In the revolution, revolutionaries saw the structure as a sign of divine and royal power, and they destroyed the shrine and its relics. The significance of the purposes that the Palais de Justice, the Conciergerie, and the Sainte Chapelle fulfilled directly influenced the damage and reconstruction that the buildings endured.

**Haylie Roberts****Kugelman Honors Program*****The French Revolution and the Guillotine***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

During the French Revolution (1789-1799), numerous individuals were executed



## OTHER PROGRAMS

using the guillotine, including high-profile political figures of the time such as Marie Antoinette and Louis XVI. This investigation examines four sites where the guillotine once stood, the repurposing of those sites during and following the French Revolution, and their contemporary uses and significance or lack thereof. The prevailing use of the guillotine as a method of public execution during the French Revolution represented an attempt of the lower-classes to bring political and social power into the public sphere, and diffuse the infamously centralized authority of the Bourbon monarchy in favor of popular sovereignty as outlined by Enlightenment-era philosophers and social contract theorists. At different times between 1789 and 1799, the guillotine stood at Place de la Concorde, Place de l'Hôtel-de-Ville, Place de la Bastille, and the intersection of Rue de Croix Faubin and Rue de la Roquette. Analyses of these four sites of the guillotine in revolution-era Paris reveal that these spaces and the events which transpired there acted as an inverse to the elaborate rituals of nobility at Versailles, and more directly as a mirror to the public enforcements of the power of the French monarchy and aristocracy.

**Julia Rodriguez**

**Kugelman Honors Program**

### ***The Cultural and Religious Significance of St. Peter's Basilica***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

St. Peter's Basilica in Vatican City marks land that has continually held importance over many centuries. Before the 4th century church, a trophy marked the site that many believed was the burial of St. Peter's body. The trophy is shaped like an aedicule, which is two columns framing either side of a door or window, and was built into a wall. There is a piece of it that extends at the bottom with a small hole in it that leads into the ground. A trophy was a small monument that many used similar to a headstone to mark gravesites today. Over two millennia, many people have visited this site in religious pilgrimages to venerate the remains. Later the construction on the first Basilica began during the reign of Constantine the Great, who lived from 280-337 CE. The current Basilica, built by order of Pope Julius II over one thousand years later, is what currently resides on the site today. The new structure, completed in 1626, dwarfs the original and retains a similar architectural style. This basilica has become one of the most visited places in Rome. The consistent building on this site marks the collective agreement that the site holds significance to a community rich in culture and history.

**Gabe Small**

**Kugelman Honors Program**

### ***Nero's Golden House Killed Him***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

Nero was the last emperor of the Julio-Claudian Dynasty and perhaps the most abysmal one of them all. He was a failure in Roman standards: instead of being a mighty military general, he competed in chariot races and expressed himself instead with playing the lyre and singing. His rule was on thin ice after the great fire of Rome that burned down over seventy percent of Rome. In a desperate attempt to save his reputation, Nero decided to showcase his imperial authority by building a massive palace dubbed the "Domus Aurea" or "Golden

House." With gold gilt, mother of pearl, and large amounts of marble, jewels and artworks brought in from every corner of the empire, this palace was the pinnacle of wealth and the peak of ancient engineering. Complete with a 100-foot-tall bronze statue of the emperor himself, the Domus Aurea was the final effort to assert his power over an empire that no longer trusted him. In the end this was not successful; although the structure was impressive, it ultimately led to his demise. Nero built his Domus Aurea to save his reputation after the fire of Rome, however this enraged the upper class leading to him being named a public enemy of the state and committing suicide.

**Kevin Teague**

**Kugelman Honors Program**

### ***From Paris to London, an Analysis of Radulphus's Copy of Ad incorrupta***

Faculty Mentor(s): Marie-Thérèse Champagne, History

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

The manuscript *Ad incorrupta pontificum nomina conservanda*, originally written by the medieval Roman scholar Nicholas Maniacutius, is a poem detailing the history of the popes. Copies of this manuscript spread throughout Europe, one such copy coming into the possession of Radulphus de Diceto, archdeacon of the Old St. Paul's Cathedral in London from c. 1180. This research project assesses and clarifies the origins of Radulphus's copy of *Ad incorrupta*, as well as determining who possessed the codex containing this manuscript and when it left Old St. Paul's Cathedral. Analyzing historical texts and recent academic studies can determine a timeline from its creation c. 1200 through various owners up to the present. The most probable location of the manuscript from which this version was copied is Paris, where Radulphus studied twice in his life. Radulphus later added the manuscript to a codex containing several texts he had collected and two of his own texts, *Abbreviationes chronicorum* and *Ymagines historiarum*. The codex containing this manuscript was removed from the Old St. Paul's Cathedral sometime after Radulphus's death, likely coming into a private collector's possession after Henry VIII established control over the clergy, before going to Cambridge University for a time, and ultimately residing in the Lambeth Palace Library, where it remains today.

**Monica Woodruff**

**Kugelman Honors Program**

### ***Mapping the Potential of Conflict-Transboundary Viewsheds***

**Co-Author(s): Domani Turner-Ward, Joslin Day, Jonathan Henley**

Faculty Mentor(s): Derek Morgan, Earth and Environmental Sciences

Lead Author Department: Kugelman Honors Program

Session: Main Poster Session

A viewshed refers to the landscape across which one has a view. A "transboundary viewshed" is a term coined by Dr. Morgan that refers to the state of views across different legal property boundaries. A view of the waterfront can represent an ecosystem service flow, where the objects in view have some aesthetic or cultural value to the viewers. The importance that views have on building a coast's image (Lynch, 1960) and therefore community culture. For some waterfront properties, the littoral right to a view is generally unobstructed, with the potential exception of natural barriers. Other locations near the coast also benefit from views. For these properties, a view can be considered a transboundary flow, because it represents a line of sight across other property

boundaries. These properties risk losing (or gaining) a view by changes in private or public development patterns. During our project, we learned the theory behind viewsheds within a geographic information system (GIS). Additionally, we met as a group to carry out the basic GIS operations to explore and develop viewsheds. After analyzing the (said or aforementioned) viewsheds, we visited a case study site, to verify and validate our assessments of potential transboundary viewshed conflict. During our visit, we carried out a process known as ground-truthing. This process involved sketch mapping and low-oblique aerial photography to validate our potential transboundary viewshed findings.

---

## STUDY ABROAD

---

**Andres De Leon Mundo**

***Study Abroad Experiences***

**Co-Author(s): Isaac Clary**

Session: Special Session: Study Abroad

**Study Abroad**

**Andrea Martinez**

***Study Abroad Experiences***

Session: Special Session: Study Abroad

**Study Abroad**

**Michaela Megginson**

***Study Abroad Experiences***

Session: Special Session: Study Abroad

**Study Abroad**

**Brenna Wright**

***Study Abroad Experiences***

Session: Special Session: Study Abroad

**Study Abroad**

AUTHOR AND FACULTY INDEX

Aboagye, Bright Da-Costa.....	28	Bellflower, Chance.....	65	Caffrey, Jane.....	31, 32, 39, 41, 43	Curtis, Denice.....	80
Adams Hernandez, Ashlea.....	10	Belony, Rose.....	79	Campbell, McKenzie.....	24	Dake, Christopher.....	68, 69, 70, 71, 72
Adcock, Alexander.....	5	Belt, Josh.....	63	Canlas, Alyssa.....	82	Daley, Nicole.....	22
Adkinson, Jamie.....	76	Bennett, Crystal.....	38, 80	Cao, Cecilia.....	64	Daniel, Carrie.....	39
Adlof, Lauren.....	70	Bennett, Wayne.....	30	Carlson, Hunter.....	73, 77	Darby, Philip.....	30
Aguirre, Sarah.....	65	Bennett, Timothy.....	53	Carr, Kelly.....	9	Davis, Ryan.....	63
Aguirre, Anita.....	45	Benson, Daniel.....	52	Carter, Allie.....	51	Day, Joslin.....	86
Akerman, Sara.....	83	Benz, Pamela.....	49	Carter, William.....	78	Day, Kimberly.....	77
Albrecht, Barbara.....	39	Bercier, Charles.....	31	Casey, Lindsey.....	82	De Leon Mundo, Andres.....	87
Alexander, Olivia.....	30	Best, Taylor.....	47, 48	Castaing, Gabriela.....	32, 35	De Lima, Guilherme.....	34
Alexander, Madison.....	25	Bethell, Kameron.....	69	Castellucci, Dale.....	9	De Oliveira, Helena.....	75
Alikhani, Zahra.....	46	Biteeva, Maria.....	62	Castro, Gina.....	14	de Sa Lowande, Rafael.....	59
Allison, Emaly.....	15	Bitner, Steven.....	67	Catalani, Connor.....	32, 41	DeMars, Dempsey.....	63
Allman, Reilly.....	53	Black, Zackary.....	54	Cavnar, Peter.....	33, 41, 43	Denny, Mathew.....	16
Almond, Madelyn.....	11	Black, Max.....	63	Cayton, Adam.....	14	Denton, Faith.....	16
Alqudah, Yazan.....	62	Blalock, Lisa.....	74	Champagne, Marie-Thérèse... 4, 14, 16, 17,		Desimone, Noah.....	11
Alston, Samaria.....	72	Blankenship, Alexandra.....	22	.....18, 20, 21, 22, 40, 66, 81, 82, 83, 85, 86		DeVries, Brandon.....	24
Alvarez, Jose.....	15	Bloyd, Joseph.....	68	Chander, Harish.....	69, 70	Diaz, Jacob.....	32
Anderson, Brittney.....	25	Blum, Matthew.....	31, 39	Chau, Donovan.....	82	Diehl, Chloe.....	29
Anderson, Nguyen.....	64	Blyn, Robin.....	10, 12, 13, 14, 24	Childress, Danny.....	82	Dillard, Dana.....	29
Apusen, Emmanuel.....	65	Bolter, Eric.....	73	Christley, Georgana.....	12	Doerr, Blake.....	45
Arajuo, Gabriella.....	64	Bolton, Zach.....	62	Chu, Khoi.....	58	Doty, Ashlyn.....	72
Areola, Isabelle.....	22	Bonds, Mackenzie.....	82	Chung, Hui-Min.....	32, 44, 45, 46	Drake, Victoria.....	47, 48
Arnett, Nelly.....	81	Bonilla, Itzel.....	37	Churchill, Catherine.....	33	Du Pre, Athena.....	10
Arruda, James.....	37, 73, 74, 77, 78	Borja Ceballos, Anamar.....	73	Clary, Isaac.....	87	Dulion, Kevin.....	25
Arvelo, Victorina.....	54	Borrelli, Delaney.....	42	Clifton, Kari.....	35, 36, 37, 38, 40, 42,	Dunson, Michalah.....	11
Atkinson, Beth.....	76	Bosso, Brooke.....	5	.....43, 44, 54		Duong, Buu-Tran.....	6
Ayivor, Sandra.....	28	Boudreaux, Sheri.....	14	Cloud, Chris.....	65	Duong, Daniel.....	67
Azar, Nico.....	63	Boutwell, Rebecca.....	31, 38, 49, 51	Cloyd, Matthew.....	46	DuPree, Alexandria.....	25
Baggett, Jenni.....	2	Bowen, Gabby.....	84	Cole, Shannon.....	74	Durepo, Shane.....	26, 83
Bagui, Sikha.....	52, 53, 58, 60	Bowman, Lacey.....	31, 39	Conceicao, Raquel.....	47	Durham, Joshua.....	24
Bagui, Subhash.....	53	Bowman, Noah.....	64	Conkle, Christian.....	66	Earnest, Wade.....	63
Bailey, Clark.....	61, 62, 70	Bratten, John.....	3	Conner, Railey.....	82	Eastman, Caleb.....	82
Bailey, Cole.....	82	Breeden, Amanda.....	82	Conti, Karli.....	71	Echelle, Conrad.....	62
Bailey, Courtney.....	67	Brinkley, Jennifer.....	27	Cook, Gregory.....	2, 3, 4, 5	Eckhart, Scott.....	80
Bain, Kristen.....	76	Brode, Melissa.....	26	Cook, Joshua.....	33, 71	Edwards, Genna.....	85
Baldwin, Kaitlyn.....	72	Brown, Andrew.....	32	Cooley, Micaela.....	69	Edwards, Jasiana.....	75
Banda, Chrissie.....	24	Brown, Lauren.....	82	Cope, Angelica.....	25	Egberongbe, Daniel.....	67
Bantista, Lauren.....	30	Brown, Sam.....	62	Cordeiro, Bruno.....	16	Engelgau, Daniel.....	16
Bare, Jackson.....	55, 82	Brunet, Isaac.....	62	Cornish, Julia.....	74, 75, 77	English, Kevan.....	33, 49
Barnes, Karen.....	31, 32, 38, 48, 49, 50, 51	Bruns, Caroline.....	22	Cosio-Lima, Ludmila.....	69, 71, 72	Escobar, Tomas Escobar.....	64
Barnes, Ashli.....	75, 77, 79	Buchanan, Max.....	60	Courneya, Chelsea.....	11	Evans, Jocelyn.....	73, 84
Barnette, Kat.....	83	Buck, Kelsea.....	82	Covington, Ashley.....	69	Evertz, Mary Anne.....	77
Barrett, Elizabeth.....	34, 54, 84	Buffington, Madison.....	32	Cowen, Savannah.....	63	Faal, Madikay.....	33
Bassham, Shelby.....	25	Buker, Hasan.....	27	Cox, Joe.....	73	Facer, John.....	64
Bauer, Edward.....	60	Burkett, Braxton.....	65	Cox, Sibyl.....	65	Fannin, Leia.....	48
Baughn, Corey.....	82	Burnett, Zane.....	66	Crow, Matthew.....	27	Farina, Josh.....	65
Beck, Lindsey.....	15	Burns, Alex.....	82	Crowson, Tom.....	65	Farmand, Anthony.....	72
Beckowitz, Brandon.....	63	Butler, Courtney.....	32	Cullen, Keegan.....	16	Farrar, Kealy.....	39
Behan, Kristina.....	68	Buzbee, Rylee.....	83	Cunningham, Christopher.....	47, 49	Fayard, Amanda.....	73

Feehan, James.....17	Gutierrez, Lali.....48	Hoffer, Jackson.....59	Kay, Klynn.....31
Fellgren, Amy.....33	Gutting, Lindsay.....55, 56	Hoffman, McKenna.....18, 20	Kelley, Rowan.....18
Fenner, Christopher.....51	Guttman, Rodney.....36, 39, 42, 47	Hogan, Ernie.....58	Kennedy, Eric.....80
Figueroa, Alexia.....83	Guy, Krista.....80	Holland, Isabel.....36	Kesharwani, Tanay.....31, 46, 47, 49
Filipcak, Sonia.....79	Hackworth, Thomas.....17	Hollander, Margaret.....73	Khakzad, Sorna.....85
Fisher, Emily.....12, 54	Hagedorn, Eli.....65	Holt, Conner.....14	Kimberl, Kody.....82
Fisher, Roz.....24	Haley, Kayla.....27	Holt, Crystal.....12	King, Jenna.....36, 44
Flack, Austin.....65	Hall, Darrell.....66	Holt, Christian.....14	Kinnard, Benjamin.....14
Flowers, Shirley.....11	Halonen, Jane.....76	Hood, David.....84	Kleinschmidt, Jordan.....37
Fonder, Carrie.....5, 6, 7, 8, 9	Hamilton, Kim.....74	Hope, Kelsey.....35	Kline, Ryan.....62
Foretich, Rachael.....82	Hamilton, Lauren.....40	Hopkins, Stephen.....58	Knapp, Benjamin.....18
Fortson, Tyler.....63	Hammond, Sydnee.....18	Hornfeck, Caroline.....36, 40	Knight, Adam.....69
Fortune, Jessi.....64	Hamner, Micaiala.....9	Houck, Branden.....63	Ko, Joung Bo.....33, 71
Fox, Alexandra.....30	Han, Hui-Ya (Gail).....72, 73	Houghton, Ali.....6	Kohan, Soha.....47
Franklin, Michaela.....34, 83	Handley, Holly.....29	Hrisca, Rachel.....10, 12	Koldenhoven, Rachel.....69
Freeman, Anna.....17	Hanks, Diana.....65	Hu, Jilin.....55	Kolomer, Stacey.....29
Freeman, Jessica.....68	Hansen, Cole.....63	Hu, Zhiyong.....55, 56, 57, 58	Kopala, John.....64
Freitas, Rowan.....30, 84	Harley, Lydia.....78	Hunter, Raven E.....17	Kreuser, Peter.....59
French, Jurnee.....83	Harrigill, Caitlyn.....38	Huntly, Chloe.....42	Kuchambi, Nadia.....65
Fulton, Matthew.....66	Harris, Emily.....54	Hurley, Kenzie.....75, 76	Kwaa, Emily.....28
Funes, Wendy.....26	Harris, Leila.....35	Hutchison, Madeleine.....12	Lajmi, Ajay.....33, 43, 49, 50
Ganas, Kate.....2	Harris, Stephen.....59	Inlander, Joshua.....18	Landingham, Jessica.....70
Garcia, Taylor.....69, 72	Harshman, Brenna.....2	Ireton, John.....65	Landreth, Sierra.....37
Gardner, Ashleigh.....12	Hartley, Cayla.....75, 76	Irschick, Duncan.....42	Lapak, Michelle.....47, 48
Garland, Megan.....17	Hartley, Stephanie.....2	Ivey, Linda.....42, 55	Larimer, Harry.....23
Garza, Tristyn.....34	Hasenberg, Piper.....44	Jackson, Case.....70	Lasher, Miriah.....25
Gates, Ragan.....83	Hatfield, James.....10	Jake, Groves.....64	Lasnaud, Alexa.....83
Gentleman, McKenzie.....10	Hatfield, Kallie.....11	Jang, Yongchul.....33, 71,	Laurenzi, Anne.....41
George, Valerie.....6	Havemann, Jarrad.....58	Janosik, Alexis.....33, 34, 35, 36, 37, 40, 42,	Lauw, Haley.....9
Gibbs, Alex.....64	Hawkins, Hailee.....60	.....44, 45, 60	Law, Nathan.....37
Gibbs, Shae.....62	Hawkins, Richard.....25	Janvier, Jarius.....29	Lederman, Syndey.....82
Gibson, Rosa-Michel.....82	Hayne, Molly.....85	Jaret, Bruce.....64	Ledford, Hannah.....75
Giddens, Sophia.....75	Hays, Alli.....20	Jeffrey, Wade.....39, 40, 41	Lee, Youngil.....33, 71
Gilliard, Jordan.....34	Hayslip, Matthew.....35	Jenson, Michelle.....44	Lehtola, Krystin.....62, 70
Giraldo, Juliana.....34	Hebert, Melissa.....35, 36	Jernigan, Morgan.....26	Lem, Rush.....64
Goins, Cody.....55	Heidenreich, Lauren.....49	Jipson, Jim.....6	LeMay, Daniel.....37
Goldberg, Sarah.....83	Heinze, Madison.....6	John, Caroline.....53	Lepo, Joe.....31
Goldstein, Gerald.....26	Hemasinha, Rohan.....60	Johnson, Ashlie.....36	Lesecq, Lucie.....65
Goode, Kristina.....75	Henley, Jonathan.....86	Johnson, Dawn.....10, 12	Letsinger, Michael.....64
Goulette, Natalie.....27	Henry, Carolyn.....58	Johnson, Joshua.....64	Levesque, Max.....23
Grant, Zachary.....25	Henry, Tyler.....10, 11	Johnson, Joseph.....64	Lewis, Tiara.....19
Green, Alison.....25	Henszey, Megan.....27	Joisin, Jahni.....23	Li, Kunqi.....60
Gregg, Andrew.....22	Hepworth, Kayley.....37, 78	Jones, Baillie.....36	Li, Manrong.....7
Griffin, Jonathan.....78	Hernandez, Alisha.....22	Jones, Dean.....76	Liebens, Johan.....56
Grozier, Corey.....62, 70	Herring, Joseph.....23	Jones, Stephanie.....36	Liu, Jia.....61
Guernsey, Clinton.....62	Hiers, Rachel.....6	Jones, Layne.....66	Liu, Yutong.....56
Gulsby, Megan.....43, 44	Hill, Hunter.....82	Kadzis, Martin.....52	Ilunga Tshiswaka, Daudet.....80
Gunger, Theresa.....12	Hinrichsen, Megan.....48	Kaono, Anthony.....65	Lockett, Avery.....65
Gunther, John.....35	Hoang, Victoria.....63	Kass, Steven.....76, 78	Long, Brianna.....82
Gustin, Ryan.....40	Hobbs, Sierra.....76	Kattine, Jonathan.....7	Lord, Renee.....76



AUTHOR AND FACULTY INDEX

Lukens, Joel.....	38	Mock, Hannah.....	76, 77	Paige, Cassidy.....	76	Redfern, Jeremy.....	49, 51
Lunsford, Breanna.....	66	Mohlmann, Nicholas.....	11, 12, 13, 14	Palmer, Andrew.....	82	Reese, Theodore.....	30, 84
Lupton, Joseph.....	65	Mohr, Isaac.....	25	Palmer, Kassidy.....	50	Regez, Bradley.....	62
Lysek, Catherine.....	10	Molek, Karen.....	47, 48	Paolini, Sarina.....	23	Reichherzer, Thomas.....	52
Mackenzie, Ian.....	61	Molina, Jose.....	7	Parker, Ian.....	49	Reimer, Jackson.....	40, 41
Macy, Morgan.....	23	Montero, Melayne.....	38	Parks, Dakota.....	12, 13	Rendos, Nicole.....	69, 70
Madden, Mars.....	19	Montgomery, Kara.....	60	Parsch, Devon.....	30, 84	Reynolds, Michael.....	65
Malisa, Mark.....	28	Morgan, Andrew.....	20	Parsley II, Russel.....	18, 20	Rice, Rhiannon.....	4
Mann, James.....	61	Morgan, (John) Derek.....	54, 86	Patel, Dhanvi.....	39	Richardson, Savannah.....	63
Mapoles, Chandler.....	10, 12	Morganson, Valerie.....	75, 76, 78	Pellow, Christina.....	74	Riddell, Heather.....	26, 83
Marten, Meredith.....	2	Morris, Jamal.....	63	Penning, Erin.....	3	Ridgeway, Eden.....	30
Martinez, Andrea.....	87	Morse, Nicole.....	7	Penrod, Charles.....	26	Riggs, Rebecca.....	8
Martinez, Jamie.....	38	Morton, Cody.....	82	Perez, Alyssa.....	8	Rinehart, Stephanie.....	82
Masih, Prerna.....	32, 41	Mosely, Justin.....	65	Perkins, Daniel.....	23	Robbs, Emily.....	41
Mason, Dalton.....	66	Mueller, Zachary.....	53	Perritt, Taylor.....	85	Roberts, Haylie.....	85
Massie, Sharon.....	37	Mughal, Tayyab.....	82	Pettitt, Taylor.....	78	Roberts, Timothy.....	56
Mastrandrea, Logan.....	38, 85	Muldoon, Kian.....	84	Philips, William.....	39	Robinson, Brigitte.....	80
Mastrangelo, Fiama.....	75, 76	Mullarkey-Coffee, Braxton.....	65	Phillips, Aimee.....	31, 49	Robinson, Nathan.....	42
Matrone, Alexis.....	19	Mullins, Logan.....	10	Piacenza, Susan.....	42	Rodriguez, Elivet.....	39, 41
Matrone, Morgan.....	11	Murcko, Garret.....	59	Piacenza, Joseph.....	42, 64, 66	Rodriguez, Gina.....	39, 40, 41
Matthews, Hannah.....	19	Myers, Jonathan.....	65	Pierce, Matthew.....	76	Rodriguez, Julia.....	86
Mattick, Carolyn.....	63	Nano, Hannah.....	58	Pietsch, Amanda.....	82	Rogers, Tana.....	11
Mauro, Charlene.....	41	Nash, Alexandria.....	20	Pilla, Priya.....	71	Rogers, Steven.....	80
Mbizo, Justice.....	79, 80	Nash, Cody.....	30	Pizza, Christina.....	33, 49, 51	Rohde, Matheus.....	75, 76
McConnell, Kerrigan.....	85	Nava-Pina, Guadalupe.....	65	Plasencia, Enrique.....	3	Rohrbaugh, Grant.....	62
McCormick, Devin.....	85	Neff, Jonathon.....	23	Plenkens, Russell.....	53	Romack, Katherine.....	10, 11, 12, 13, 14
McDonald, Tucker.....	85	Nelson, Andrea.....	82	Plum, Lily.....	85	Rook, Jacob.....	62
McGee, Sean.....	64	Neto, Jesse.....	34	Pohl, Kelly.....	23	Rosa, Christian.....	59
McGuirk, Jeff.....	66	New, Savanna.....	58	Porter, Sophia.....	49, 51	Rosa, Veronica.....	68
McInnis, Madison.....	77	Nguyen, Rosemary.....	47, 48, 82	Posey, Mitchell.....	58	Rother, Patrick.....	4
Mcleod, Ella.....	78	Nicholson, Emily.....	85	Potdukhe, Trupti.....	39	Rothfus, Mackenzie.....	39, 41
McManus, Nate.....	5	Nicholson, Relashia.....	38	Powell, Anna.....	56	Rowe, Aleigh.....	42, 55
Mead, James.....	25	Nigro, Ashlee.....	30, 84	Prayaga, Chandra.....	67	Rowell, James.....	65
Medina, Camila.....	38	Nkansah, Joan.....	28	Presley, Isabel.....	8	Rowland, Eric.....	65
Megginson, Michaela.....	87	Norre, Jacob.....	62	Preston, Kyle.....	66	Royappa, A. Timothy.....	37, 47, 48
Mendez, April.....	56	Norton, Jasara.....	17, 24, 30, 78	Preston, Rylee.....	10, 11, 13	Rudo, Jessica.....	20
Menezes, Arthur.....	59	Oatts, Trinity.....	82	Prestridge, Geoffrey.....	64	Rumbough, Isabella.....	20
Mensah, Wisdom.....	28	O'Bar, Julianna.....	39	Price, Payton.....	70	Russel, Sam.....	59, 63
Michael, Rodriguez.....	64	Odom, Victoria.....	47	Priefer, Bryan.....	10, 11, 13	Russell, Isabel.....	21
Milewski, Justin.....	3	Oduro Nayakro, Emmanuel.....	60	Prieur, Peyton.....	40	Ryan, Jessica.....	68
Miller, Duncan.....	23	O'Hern, Sean.....	7	Quintin, Stephan.....	33	Sakalarios-Rogers, Regina.....	11
Miller, Elisha.....	23	Okafor, Anthony.....	79	Radloff, Lacey.....	38	Samborski, Kristina.....	42
Miller, Kyle.....	66	O'Neal, Megan.....	65	Rainey, Vanessa.....		Sanders, Brooke.....	65
Mills, Grace.....	68	Ortegren, Jason.....	55	Ramachandran, Bhuvanewari.....	58, 59	Sans Peur, Ilda.....	80
Mills, Samuel.....	67	Ortolano, Brendon.....	65	Ramey, Preya.....	3	Santiago, Tiffany.....	4
Mims, Ryan.....	63	Outzen, Claney.....	77	Ramirez, Geoffrey.....	20	Sauer, Joshua.....	25
Mishoe, Joshua.....	44	Owens, Cassie.....	82	Ramirez, Brett.....	41	Saunders, Gregory.....	7
Mishra, Amitabh.....	52, 53	Owusu-Daaku, Kwame.....	42, 53, 54,	Ramirez Batista, Gianni.....	40	Savell, Shelby.....	66
Mitchell, Cody.....	11	.....	55, 56, 57, 60	Ray, John.....	65	Schantz, April.....	75
Mitchell-Cook, Amy.....	19, 20, 24	Pabon, Mikaela.....	67	Rayfield, Madison.....	77	Schildberg, Stephen.....	82

Schmutz, Phillip .....	55, 56	Stukey, David .....	65	Wagner, Nicholas.....	44	Womacks, Cara.....	45
Schneider, Sherry .....	74, 77	Sturgeon, Justin.....	7, 8	Waidner, Lisa .....	31, 35, 39, 41	Woodruff, Monica .....	86
Schneider, Ian.....	33	Sukhera, Emen.....	43	Wakeland, Cameron .....	47	Wooten, Hannah.....	59
Schroeder, David.....	65	Sullivan, Erin.....	37	Waldo, Nicole.....	25	Worley, Grace.....	45
Schundelmier, Benny .....	67	Sutt, Mackenzie .....	21	Waldorff, Nathan .....	66	Wright, Brenna.....	87
Schuster, Simone.....	53	Swords, Michael.....	39	Walker, Nicole.....	25	Wright, Jeffery.....	31
Schutts, Josh.....	82	Taghi, Alireza.....	79	Walkinshaw, Megan.....	44	Wright, Rachel.....	45
Schwartz, Allison.....	2, 48, 57	Taghi, Parisa.....	68	Walkup, Taylor.....	5	Wright, Sarah.....	82
Schwartz, Matthew.....	57	Taylor, Bradley .....	49	Waller, Chaise .....	12	Xu, Xu.....	58
Schwieg, Julia.....	48, 50	Taylor, Pierce.....	78	Walling, Angelina.....	51	Yagci, Dan .....	74
Sciarini, Lee .....	76	Taylor, Scott.....	34, 38, 39, 45, 49	Wan, Huiyin.....	57	Yagci, Sadan.....	72
Scott, Teresa.....	13	Telebak, Ines.....	50	Wang, Zian.....	58	Yates, Matthew.....	45
Scruggs, Lindsay.....	9	Teuchtler, Wendy .....	43	Ward, Mason.....	63	Yates, Michael.....	63
Seals, Samantha.....	56, 61, 80	Thai, Melody.....	82	Ware, Carrie.....	21	Yates, Rebecca.....	78
Segovia (Ruiz), Benny .....	33, 71	Thayer, Ashton.....	82	Ware, Ke'Aundrix .....	82	Yount, Zachary .....	78
Seketa, Timothy .....	66	Thompson, Kaitlyn.....	43	Ware, Becka.....	22	Youssef, Tarek .....	59
Severson, Logan.....	35	Thompson, Tyler.....	48	Warner, Shelbi.....	66	Yuska, Haley.....	46
Sevil, Hakki Erhan .....	64	Thrift, Noah .....	38, 50	Warren, David.....	66	Zapata, Vince.....	63
Shippee, Steve.....	4	Thuy Doan, Duong.....	47	Warrensford, Ollie.....	82	Zatopkova, Katerina.....	77, 79
Shrader, Stacy.....	26	Tice, William.....	65	Waters, Caitlyn .....	46	Zhang, Cheng .....	42, 63, 64, 65
Simmering, Ari.....	35, 40	Till, Harmoni.....	10, 13	Watson, Adeline.....	51	Zhu, Yanhui .....	61
Simonds, Jason.....	53	Tilton, Angelica.....	21	Watson, Megan.....	10, 14	Zimmerman, Dane.....	32
Simpson, Jeffery .....	62, 69, 70	Tognarine, Trevor .....	22	Watson, Stephen .....	12, 14	Zukosky, Christopher.....	66
Sims, Hannah.....	27	Tran, Kieu.....	43	Weaver, Jesse .....	62, 70	Zwierewicz, Ana.....	81
Sims, Juliana.....	21	Tran, Quan.....	27	Wei, Madeline.....	33, 71		
Sims, Peyton.....	39	Traynor, Kirsten .....	10, 78	Wells, Jamin.....	15, 17, 20, 21, 22		
Siren, Teddy.....	20	Truax, Sydney .....	36	Wells, Judith.....	5		
Sly-Delgado, Barry .....	53	Turner, Alana.....	69	West, Charlie .....	44		
Small, Gabe.....	86	Turner-Ward, Domani.....	43, 57, 86	Whitaker, Justine .....	33, 34		
Smith, Austin.....	65	Ujj, Laszlo.....	67	White, Courtney.....	23		
Smith, Garhett.....	62	Um Kaman, Christian.....	61	Whitfield, Stephanie.....	32		
Smith, Katie.....	23	Underwood, James .....	63	Wilder, Caleb.....	22		
Smith, Tyler.....	25	Upton, Sara.....	10, 13	Wilkinson, Sheridan.....	45		
Smith, Wheeler.....	37	Urbaez, Elisabeth.....	9	Williams, Bryen.....	66		
Smith Cadogan, Shaundra .....	13	Vadas, Mark.....	4	Williams, Caleb.....	22		
Smith-Peters, Cynthia.....	81	Valloch, Noah.....	63	Williams, Melissa .....	66		
Sneeder, Efstathios.....	42	Van Der Like, Jill.....	30, 78, 84	Williamson, Nicholas.....	22		
Snider, Dallas .....	59, 82	Vandergriff, Kaley Jo.....	26	Williamson, Abigail.....	51		
Snider, Savannah.....	42	Varney, Christopher.....	67	Wilson, Ashley .....	72		
Soto, Sonia.....	8	Vaughan, Donald.....	44	Wilson, Kayla .....	22		
Srinivasan, Ashok .....	53	Vaughan, Rebecca.....	78	Wilson, Samuel.....	69, 70		
Steele, Jessica.....	77	Venezia Carroll, Alexandra .....	71	Wilson, Kirt.....	56		
Stephen, Bradley .....	63	Vera, Monika .....	50	Winburn, Allysha.....	34, 54, 83		
Stewart, Ethan.....	69	Vera, Mercedes.....	48	Winn, Nathaniel.....	57		
Sticha, McAllister.....	10	Vertudez, Mia.....	41	Wirth, Christopher.....	71		
Stone, Erin.....	4, 16, 18, 19, 20, 22, 24	Vinci, Debra.....	71	Wisdom, Margret.....	80		
Stone, Haydon.....	65	Vinke, Eric .....	69, 72	Wise, Kurt.....	10		
Stone, Richard .....	24	Viray, Ashlee .....	71	Wise, Tim.....	65		
Strong, Kaylin.....	75, 76, 78	Vu, Chau.....	66	Wisembaker, Kathryn.....	25		
Strong, Robert.....	66	Wade, Aaron.....	66	Woltering, Emilie.....	24		



---

Office of  
Undergraduate Research  
UNIVERSITY *of* WEST FLORIDA