SOARS

APRIL 27

2022

UNF
UNIVERSITY of
NORTH FLORIDA

WELCOME

The Showcase of Osprey Advancements in Research and Scholarship (SOARS) is an annual interdisciplinary conference at the University of North Florida (UNF) in which undergraduate and graduate students showcase their research and creative projects. Research projects are usually presented in poster format, but we also work with students who present in multimedia formats. SOARS is a welcoming environment in which students can share their work, which will be in various stages of development.

SOARS, a highlight of UNF Research Week, is organized and sponsored by the Office of Undergraduate Research (OUR) with graduate projects sponsored by the Graduate School. In this third year as a virtual event, SOARS continues to serve as a platform for highlighting research activities of our undergraduate and graduate students.

We gratefully acknowledge and thank Kaitlyn Minnicks, the Coordinator of the Office of Undergraduate Research, and Andy Rush, Course Media Developer with the UNF Center for Instruction and Research Technology (CIRT) Creative Team, who worked nimbly and creatively to make SOARS 2022 happen. We also acknowledge Rebeca Mata, the Designer for the Office of Undergraduate Research for creating this program.

We hope you enjoy the 2022 Showcase of Osprey Advancements in Research and Scholarship – SOARS!

Judith D. Ochrietor, Ph.D.
Director of the Office of Undergraduate Research
University of North Florida

Megan Kuehner
Director of the Graduate School
University of North Florida

KEYNOTE SPEAKER
DR. CLIFF ROSS, PH.D.

For the past several decades Dr. Cliff Ross and his marine biology students have been using a combination of biochemical, cellular and ecological approaches to better understand the stress responses of seagrasses, corals and algae. Over the past several years, most projects have been centered on studying seagrass diseases as this area served as the basis for the Terry Presidential award.

Marine pathogens can have profound impacts on their hosts, with disease outbreaks leading to sudden population declines in many taxonomic groups. One such example is seagrass wasting disease (SWD), which involves complex relationships among marine vascular plants, environmental parameters, and protistan stramenopiles of the family Labyrinthulaceae. This disease affects seagrasses from local to regional scales and Labyrinthula varieties can vary in their host-specificity, pathogenicity, and virulence though the specific mechanisms underpinning natural disease events remain elusive. A growing body of research points to links between climatic changes and an increase in transmission, host susceptibility, and frequency of marine diseases. However, a better understanding of host-pathogen interactions in the marine environment, the induced responses mediating them, and the role of the environment in altering their outcome should aid in understanding outbreak dynamics. This talk will discuss the current state of Florida.

GRADUATE MENTOR OF THE YEAR NOMINEES

Dr. Chitra Lakshmi K Balasubramanian,
Physical Therapy

Dr. Amber Barnes,
Public Health

Dr. Dale Casamatta,
Biology

Dr. Patrick Kreidl,
Electrical Engineering

UNDERGRADUATE MENTOR OF THE YEAR NOMINEES

Dr. Cigdem Akan,
Civil Engineering

Dr. Keith Ashley,
Sociology, Anthropology, & Social Work

Dr. Mandi Barringer,
Sociology, Anthropology, & Social Work

Dr. Jelena Brezjanovic,
Sociology, Anthropology, & Social Work

Dr. Kristen Hicks-Roof,
Nutrition and Dietetics

Dr. Amy Lane, *
Chemistry

Dr. Hannah Malcolm,
Chemistry

Dr. Clayton McCarl,
Languages, Literature, & Culture

Dr. Jacqueline Meier,
Sociology, Anthropology, & Social Work

Dr. Marie Mooney,
Biology

Dr. Judith Ochrietor, *
Biology

Dr. Gordon Rakita,
Sociology, Anthropology, & Social Work

Dr. Jutima Simsiriwong,
Mechanical Engineering

Dr. Frank Smith,
Biology

* 2012 Undergraduate Mentor of the Year
* 2013 Undergraduate Mentor of the Year

GRADUATE RESEARCHER OF THE YEAR NOMINEES

Alexandria Alcantara,*
Material Science & Engineering

Cristal Benitez,
Health Science

Allison Carrier,
Health Administration/Psychological Science

Cesar Castellon,
Computer & Info Science

Matthew Graham,
Computer & Info Science

Hollie Minichiello,
Psychological Science

Angel Perez Vila,
Business Analytics

Nate Quinn,
Clinical Mental Health Counseling

Madison Reasonover,
Psychological Science

Tamim Samman,
Computer & Info Science

Madeline Zipperer,
Health Science

*Alexandria Alcantara was Undergraduate Researcher of the Year in 2021.

UNDERGRADUATE RESEARCHER OF THE YEAR NOMINEES

Alexander Bartkowiak,
Biology

Amy Batten,
Biology

Jenna Countryman,
Nutrition & Dietetics

Gini Duong,
Computing & Info Sciences

Amanda Game,
Interdisciplinary Studies

Erisa Gjoka,
Biology

Lynne Hemmingway,
History/Spanish

Raymond Kapperman,
Mechanical Engineering

Kalie Leon,
Psychology

Victoria Leventman,
Computing & Info Sciences

Kelly Melendez,
Anthropology

Hannah Merritt,
Anthropology

Jordan Nichols,
Nutrition & Dietetics

Melinda Peacock,
Spanish

Brianna Rodriguez,
Mechanical Engineering

Tala Sartawi,
Biology

Hannah Thomas,
Behavioral Neuroscience

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Brenda Rolison

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Susan Trudeau

John Kantner, Ph.D

Karen Cousins, Ph.D

Karen Patterson, Ph.D

Virginia Kemption

Alarie Gibbs, Ed.D

David Reynolds

Anne Pfister, Ph.D

Bryan Knuckley, Ph.D

Stephen Stagon, Ph.D

Terri Ellis, Ph.D

Matthew Gilg, Ph.D

Amy Lane, Ph.D

Caroline Howard

Alexandria Alcantara

Caitlin Zarzeczny

Alejandro Preciado

Dana Arnold

Sydney Wissinger

Kianna Buehler

Amy Williams

Katie Peters

Wendy Rahman

Blair Bassett

John Schneider

Chartwells Catering

Kira Fellows

George Boston

SCHEDULE OF EVENTS

12:00 P.M. - **OPENING**

12:15 P.M. - **WELCOME**
by Gordon Rakita

12:20 P.M. - **INTRODUCTION OF TERRY PRESIDENTIAL**
Professor Lecture
by Julie Merten

12:25 P.M. - **INTRODUCTION OF DR. CLIFF ROSS**
by Mr. David Reynolds

12:30 P.M. - **TERRY PRESIDENTIAL**
Professor Leture
by Cliff Ross

1:10 P.M. - **Q&A MODERATED**
by Julie Merten

1:20 P.M. - **AWARDS**
Graduate Mentor of the Year
Graduate Researcher of the Year
Undergraduate Mentor of the Year
Undergraduate Researcher of the Year
Graduate/Undergraduate Projects of Merit
by Gordon Rakita and John Kantner

1:35 P.M. - **CLOSING**

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Undergraduate Research

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Health & Social Sciences
Undergraduate Research

Health & Social Sciences
Graduate Research

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Health & Social Sciences

Graduate Research

Biology, Physics, & Chemistry

Undergraduate Research

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Biology, Physics, & Chemistry
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Biology, Physics, & Chemistry
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Engineering, Math, & Computer Science
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Engineering, Math, & Computer Science
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Undergraduate Research

Preserving Florida's Historical Cemeteries

Kelly Melendez

The Houston family cemetery, located on Big Talbot Island, Florida, was established in 1824 with the burial of Elizabeth Spicer-Houston, the youngest daughter of Spicer Christopher and the wife of John Houston. The Houston cemetery remains an important landmark in the history of northeast Florida and it is the final resting place for some of Florida's earliest pioneers, such as a Revolutionary War Patriot and Jacksonvilles first river bar pilots. Unfortunately, the passage of time and a period of vandalism have caused the loss of important cultural heritage including the exact location of some graves within the cemetery. This project utilized Ground Penetrating Radar (GPR) to attempt to locate any of the unmarked graves within the Houston cemetery. The purpose of this project is not only to preserve part of Florida's history by recording its current condition, but to also make note of any anomalies that may occur when using GPR in a 18/19th century cemetery with the intention of locating unmarked graves.

Dr. Gordon Rakita
Sociology, Anthropology, & Social Work

The University of North Florida Center for Nutrition and Food Security Hunger Survey

Caroline Augustine

In collaboration with the University of North Florida's Center for Nutrition and Food Security (CNFS), I have created a mobile interactive survey to track and analyze the physical and mental wellbeing of food pantry users. Using ArcGIS platforms, Survey123, and Map Viewer, the survey is user-friendly. Survey123 also provides continual updates to its analysis function which provides up-to-date statistics for each question. We want to implement this data to identify trends in the overall health of users and, with the help of Map Viewer, identify trends across the city. The web map I have created hosts many feature layers that identify the average answer to various questions in each zip code in Jacksonville; These layers, when applied to the map, give us a visual of what parts of our city are trending higher for food insecurity. Feature layers are easy to use and can also be used to track demographics. These layers used in collaboration can help to identify minority groups more susceptible to undernourishment or malnutrition. These tools will also allow us to pinpoint which areas of our community need more support so we can better fight the battle of food insecurity in Jacksonville, FL.

Meghan Niemczyk
Center for Nutrition and Food Security

COVID-19: Positivity, Human Resilience, and the Ability to Flourish Under Extraordinary Stress

Destiny Cole and Emily Koch

Most of the studies done on COVID-19 have focused on examining negative outcomes in a variety of different ways. Human beings have endured many disasters in the past, world wars, famine, and pandemics and have shown remarkable resilience amidst crisis. Amidst the negativity of the COVID-19 pandemic, we took a different approach and examined behaviors from a positive, strength-based, human assets perspective. We used a qualitative method and undergraduate students from a state university responded to some open-ended questions that looked at some positive outcomes. The qualitative data were subjected to content analysis and categorized by the themes that emerged. Some interesting categories emerged that included factors such as gratitude, appreciation, respect for others, the importance of family and friends among others. The implications of the findings and recommendations for future research are discussed. These findings lend support to other research done in the area of positive psychology that in extraordinary circumstances human beings are capable of seeing the positive and can be remarkably resilient. This study underscores the need to examine "what goes right "and not just"what goes wrong" in life for this to truly capture the breadth of the human experience.

Dr. Lakshmi Narayanan
Psychology

Hunger Map: UNF Center for Nutrition and Food Security

Allison Beckford

In Duval County, the rate of food insecurity is 20.1% for adults. This number is the highest compared to other counties in the state of Florida. One of the main concerns in Jacksonville is the issue of food deserts, which are locations that have limited access to affordable and healthy food compared to other areas that have access to supermarkets that provide access to fresh, healthy foods at affordable prices. The goal of this project was to update information on the Hunger Map created by Brooke's College's Center for Nutrition and Food Security. I contacted food pantries around Jacksonville and confirmed information such as their hours of operation, their location, how many households they feed in a week, and how this number was affected due to the pandemic, among other topics. This information was then placed into an excel spreadsheet so that the Hunger Map could be updated and people that utilize it have more accurate information. The Hunger Map serves the city of Jacksonville by placing information about food pantries for different areas in one convenient location so people who need food can visit when it works the best with their schedule. I was able to update 31 food pantries' information for the Hunger Map and confirmed that three were closed.

Ms. Meghan Niemczyk
UNF Center for Nutrition and Food Security

Increasing Professional Diversity Through the RD Mentorship Program

Jenna Courtryman and Jordan Nichols

The purpose of this study is to characterize and compare participants' diversity demographics in the RD Mentorship Program as compared to the dietetics profession across the United States. The RD Mentorship provides nutrition students the opportunity to participate in a project-based mentoring program with a Registered Dietitian. Program goals were focused on mentoring, professional advancement, communication enhancement, increased diversity and exploring career pathways. In 2020 and 2021, there were 257 mentors and 369 mentees, and 235 mentors and 335 mentees, respectively. According to the CDR's 2020 data there was a significantly greater number of individuals in the RD Mentorship Program of Hispanic/Latino (16.5% vs. 6.5%) and African American (6.5% vs. 3.5%) compared to national data. Within the mentees, this program showed greater representation of Hispanic/Latino (19% vs. 10%) and Asians (10% vs. 6%) compared to national student makeup. Additionally, there was representation across the spectrum of dietetics professional fields, with the greatest representation in private practice (n=138), clinical (n=101) and other (n=78). Within both years of this national, virtual-based mentoring program, there is a greater disbursement of diversity including both race and scope of practice. These findings can indicate that the RD Mentorship Program is a viable opportunity to help expand diversity in the profession. Future research should continue to investigate programs, such as the RD Mentorship Program, at increasing professional diversity in terms of race, ethnicity, and scope of practice.

Dr. Kristen Hicks-Roof
Nutrition & Dietetics

Critical Curation to Reach and Teach All Students

Candace Stewart

In this work, a low-cost screen-printing technique was used to fabricate a UV sensor on a flexible substrate, with a silver (Ag) as the electrode material and the zinc oxide (ZnO) semiconductor as the UV sensing material. The screen-printing technique is an inexpensive and scalable method used for fabricating flexible sensors that are ideal for wearable devices. The fabricated sensor showed good mechanical bending stability. The 365 nm UV light source was used to test the UV sensing performance. The on/off cyclic UV illumination data collected showed the fabricated sensor's ability to respond to UV radiation. The sensor was connected to the Arduino pro mini to allow for wearability. The UV intensity response was displayed based on the color of the RGB LED connected to the Arduino. These results showed an inexpensive UV wearable sensor's potential to be developed into a device that helps users limit their long-term exposure to UV radiation and its health effects.

Dr. Jamey Burns, Dr. Deborah Reed
Education & Human Services Administration, Exceptional, Deaf, and Interpreter Education

Looking for Biomarkers of Happiness with fNIRS

Hannah Thomas

Previous research using functional near-infrared spectroscopy (fNIRS), a non-invasive brain imaging technique, has shown that depression is correlated with reduced activity in the left prefrontal cortex when completing a verbal fluency task (VFT). Successful treatment of depressive symptoms is associated with increased activity in the left prefrontal cortex and better performance on a VFT. These studies have examined depression levels, but little research has utilized fNIRS to measure happiness. fNIRS uses two different wavelengths of near-infrared light to quantify concentrations of oxygenated hemoglobin, a direct measure of cortical activity. We aim to identify biomarkers for happiness by focusing on three of its major components: optimism, agency, and social connectedness. Participants complete scales that measure these constructs to determine happiness levels, then neural responses in the prefrontal cortex are recorded as they complete a VFT that consists of four blocks. The baseline is a basic VFT where participants come up with as many words as they can that start with a specific letter. The next three blocks ask participants to list as many words as they can think of when it comes to situations that center around optimism, agency, or social connectedness. We expect that happier individuals will have more activity in the left prefrontal cortex and better performance on the VFT compared to those who are less happy. We also expect to find the brain regions associated with optimism, agency, and social connectedness individually.

Dr. Tracy Alloway, Dr. Katherine Hooper
Psychology

Semantic Markup and Contextual Research Related to a Digital Edition of a Seventeenth-Century Spanish Bibliography of the Indies

Stacey Harmer

This project involved editorial work and contextual research related to Dr. Clayton McCarl's digital edition of Antonio de León Pinelo's Epítome de la biblioteca oriental y occidental, náutica y geográfica (Summary of the Library of the East and West Indies and the Nautical and Geographical Arts, 1629). I used TEI-XML, the international standard for text encoding in the humanities, to mark up several aspects of the text related to the names of individuals, the publication status of the written works León Pinelo enumerates, as well as a range of the bibliographer's sentiments, such as doubt, praise, criticism, and corrections, regarding certain texts, authors, and their work. I also conducted contextual research related to a subset of the people and books mentioned in León Pinelo's text. The results of this research were then encoded into the draft edition so that Dr. McCarl can conduct deeper research on these items while on site in Madrid in May 2022.

Dr. Clayton McCarl
Languages, Literatures and Cultures, Digital Humanities, International Studies

Containment, Care, & Corpses: West African Mortuary Practices Amid the Ebola Epidemic

Hannah Merritt

In a time of public health turmoil, reflecting on past global health crises can reveal information about current and future pandemics and epidemics. My research, Containment, Care, & Corpses: West African Mortuary Practices Amid the Ebola Epidemic, uses quantitative and qualitative data to examine correlations between mortuary practices and the 2014-2015 Ebola virus outbreak in West Africa. By examining factors and components of West African environments, cosmologies, belief systems, and public health responses I answered questions regarding how West African mortuary practices have been altered by the Ebola virus and what the Ebola outbreak tells us about pandemics, like COVID-19. I explored how different cosmologies affect perception of disease and mortuary practices and how environmental and geographical factors contribute to public health responses and funeral practices. I also investigated how animal interaction for both functional and cosmological purposes have been altered due to Ebola outbreaks. My qualitative data consisted of an Ebola epidemiology literature review and an ethnographic survey of West African culture groups, and my quantitative data consisted of using CDC data to create maps and other visualizations depicting population density, and death and case count in West African countries using Tableau statistical software. My synthesized results reveal there is a correlation between Ebola outbreaks and mortuary practices. A benefit of this study is that it focuses on an underrepresented region of the world and demonstrates cross-cultural importance and relevance. The dissemination of this research will induce global conversation about the relationship between society and science.

Dr. Gordon Rakita
Sociology, Anthropology, & Social Work

A Statistical Study of Animal Use at Late Helladic Lerna

Thalia Grace Lynn

In 2008 Dr. David S. Reese undertook a reanalysis of the faunal remains present in the Late Helladic period (ca. 1050 BC) site of Lerna, Greece encompassing a continuous history of human activity spanning from the Early Neolithic period to the Late Bronze age. Located on the water's edge in Greece, Lerna once stood as a port, attracting and housing many individuals of the time. Excavated in the 1950s by John L. Caskey, the site contains a vast artifact assemblage, including human graves, animal graves, and refuse disposal, including animal remains. Long neglected in comparison to the human remains and pottery found at the site, Reese's exploration of the preserved animal bones provides vital information to further understand the human and animal interactions present at Lerna. Utilizing these observations, with the lens of social zooarchaeology, this study aims to undertake a statistical analysis of the variation within the stratified accumulation of the

faunal remains throughout time and space. Testing of the variations with a focus on species abundance, burn level, butchery, completeness, and distribution per context type in collaboration document just what occurred to the faunal assemblage. Interpretations of these statistical test results aim to both reconstruct past human behavior and understand what was driving the interactions between humans and animals at this time and place in history.

Dr. Jacqueline Meier, Dr. Gordon Rakita
Sociology, Anthropology, & Social Work

The Effects of Personalization on Homelessness Stigma

Kalie Leon

Previous research has suggested those in stigmatized groups experience status loss, social rejection, and dehumanization. The homeless population in particular has also been perceived as deserving of blame for their current situation. Using the homeless population as the stigmatized group, the current study sought to investigate whether personalizing people in stigmatized groups leads to differences in attitudes towards them. Participants consisted of 148 undergraduate students enrolled in psychology courses from the University of North Florida. Via Qualtrics, participants were randomly assigned to a vignette that either included general information about a homeless man or one with more personal details such as his name and family and employment history. We measured attitudes through social distance, perceived dangerousness, willingness to provide economic aid, and the extent to which the people in the vignettes were to blame for their situation. Results from independent sample t-tests indicated that those in the personalized condition, relative to those in the general condition, were significantly more willing to socially engage with him ($p = .005$), perceived him as less dangerous ($p = .002$), and believed he was less to blame for his situation ($p = <.001$). Economic aid was not different between the groups. The results suggest that attitudes towards stigmatized people depend on how much personal information is provided, rather than the stigma itself.

Dr. Paul Fuglestad
Psychology

The Influence of Worldly Experiences on Creativity

Lillian Seltenreich, Caroline Aguiar, Luciana Nunez, Erica-Ann Peters, Madeleine Powers, Kali Robertson, Samuthira Sivashanmugham

A few studies have found that international experiences can enhance creativity in students. This study extends existing creativity research that has mainly been conducted in student samples to a group of top experts; by studying worldly experiences of Nobel Laureates who per definition have shown extraordinary creativity. A category system with 33 operationalized variables relating to demographic information and experiences abroad was developed and used to study and code worldly experiences in 146 Nobel

Laureates and a matched comparison group of 150 randomly selected professors who work for the top-rated universities around the world in the same fields as the Nobel Laureates (chemistry, physics, medicine, economics, and literature; excluding peace). Biographical information on the Nobel Laureates and control group was gathered, analyzed, and coded along the previously mentioned categories in order to gain a deeper understanding of how cultural influences and experiences that took place during childhood through adulthood may have contributed to the successes of Nobel Laureates. Sources were both information available online as well as direct email contact with a inserted survey Qualtrics link to every participant. Interrater reliability will be conducted. Results will show if and to what extent worldly experiences can enhance creativity. Findings will have implications for universities and organizations. For example, more study-abroad courses could be supported at universities in order to enhance creativity in students.

Dr. C. Dominik Guess
Psychology

Dietary Intake of Dementia Patients Compared to MIND Diet Recommendations

Anna Waterman

Background: It is well-documented that nutrition plays a role in the development and the progression of dementia. Additionally, nutritional deficiencies and malnutrition are common in patients with dementia. Certain dietary patterns have been shown to be protective against this disease, namely the MIND diet. There is limited data on the current intake of individuals living with dementia therefore it is important to identify nutrition patterns to improve outcomes. Methods: Dementia caregivers (n=28) were asked to complete a food frequency questionnaire (FFQ) on the intake of their loved one with dementia. The protocol was approved by the university IRB and the study was conducted in Duval County. Food intakes were compared to the recommended dietary pattern described in the MIND diet. SPSS was used to compute descriptive statistics. Results: Participants fell short of the recommendations set by the MIND diet. In the group, consumption of whole grains was low at only 3.6%. Eleven out of the 28 participants reported no berry consumption while 13 reported no bean consumption. Of those that reported berry and bean consumption, it was only at 28.2% and 11.5% respectively of standards. Additionally, of the 50% that reported nut consumption, only 25% met MIND diet recommendations. Conclusion: Results indicate that individuals with dementia are eating below the recommended levels of many foods suggested in the MIND diet, while these recommendations could help improve cognitive function. Therefore, these findings indicate a call to action for input from Registered Dietitians to counsel patients and caregivers on relevant nutrition issues after dementia diagnosis.

Dr. Lauri Wright, Dr. Claudia Sealey-Potts, Dr. Corinne Labyak
Nutrition and Dietetics

The Effects of the Internet Shutdown by the Cuban Government

Daniel Fiannaca

Last year, there were nation-wide protests in Cuba because the Cuban people were fed up with the government for many reasons. Because of the uniqueness and great importance of these events, this research sets out to investigate what happened. During the protests, the internet in the country was shut off by the Cuban government in an attempt to stop the protests. This is a major part of the events and because of that, the research looks to see what effects came about because of this internet shutdown. The question this research looks to answer is "What were the effects of the Cuban government's shutdown of the internet during the 2021 protests?". This question was explored because there undoubtedly had to be a reason and effects that came from the decision to turn off the internet within the country. How this research went about answering this question was looking at three things that were affected during these events: communication, propaganda, and culture. The research concludes that the effects of the internet shutdown from the Cuban government during the protests were negative. Communication by Cuban citizens online stopped, cultural uses on the internet from Cuban citizens stopped, and propaganda was put out to the population to deter protests and protesters.

Dr. McCarl and Dr. Mattice
Languages, Lits., and Cultures Department

Using Values to Indirectly Change Vaccine Attitudes

AJ Likosar

Indirect attacks on values have been proven more persuasive than direct attacks on political attitudes, especially those that are resistant to change (Blankenship et al., 2012). The purpose of the present study is to apply methods of indirect attitude change that have previously been demonstrated as effective to the current global pandemic. The value of individualism is both widely respected in western culture and correlates with vaccine attitudes (Yu et al., 2021) and COVID-19 health outcomes (Rajkumar, 2021) making it a suitable candidate. Participants will complete initial measures of individualism and attitudes on several political topics including vaccine attitudes. Confidence held in the attitudes on political topics will also be assessed. Participants are split into two groups at random and shown the same message with an expressed purpose of either an attack on the value of individualism or an attack on anti-vaccination attitudes. Participants will be given three minutes to give their thoughts on the message to provide additional qualitative and quantitative data. We expect results to demonstrate a decrease in the favorability and confidence of anti-vaccine attitudes post manipulation. It is expected that the individualism condition will lead to a greater decrease in the favorability and confidence of vaccine issues than the direct attitude condition.

Dr. Paul Fuglestad
Psychology

Reaching Out: How Does the General Public Receive Sex/Gender-Related Psychology Journals

Michael Howell

It was found in a study by Moss-Racusin et al. (2012) that men are more likely to be hired and supported in academia than women. In a study by Brown et al. (2022) they found that college students taking psychology classes perceived sex/gender related psychology journals as less meritorious than other specialty psychology journals, and this was especially true for men. These findings support the idea of androcentric bias (the focusing on the male centric point of view either consciously or unconsciously therefore marginalizing women's points of view) in psychology students. Altmetrics are used to examine the impact of a journal through public mentions in popular press. Higher Altmetrics scores reflect larger public reach. Using Altmetrics we explored the public reach of sex/gender related psychology journals versus other specialty psychology journals by comparing the top 50 articles in 4 sex/gender related psychology journals with the top 50 articles in other-specialty psychology journals matched on 1 year and 5 year impact factors. Surprisingly, the results showed that the public reach of sex/gender related articles was significantly greater than that of other-specialty psychology journals, which could indicate androcentric interest (that people are interested in research being done to either support or dispel androcentric tendencies).

Dr. Elizabeth Brown
Psychology

Investigating the Correlation Between Two Dietary Methods

Mary Rachel Tipton

Multiple dietary assessment tools are available to medical professionals like Registered Dietitian Nutritionists (RDN) to assess dietary intake. The purpose of these tools is to look at food patterns, assess disease risk, and help the client make dietary changes that mitigate the risk of many chronic diseases. Relying on a single method may leave out important information about a person's nutrient intake. Each method has strengths and weaknesses yet integrating dietary intake methods is a more effective approach than using a single method when investigating the connection between diet and disease risk. This study aims to assess the correlation between two methods of dietary assessment the Dietary History Questionnaire III and the 24 hour recall in adults 35-64 years of age. Through completing this study and reviewing the data from the two questionnaires, we found that the results varied depending on the nutrient. Vitamin E, Vitamin D, Vitamin A, and Calcium all had a small median percent difference between the two. Whereas, Sodium, Fat, Cholesterol, and Vitamin C had a much greater median percent difference. It also showed that men reported higher nutrient intake than women. This is what we would expect since men require a higher caloric and nutrient intake.

Dr. Andrea Arikawa
Nutrition and Dietetics

Increasing Green Foods with the SWAP System

Atalia Vazquez

The "Increasing Green Foods with the SWAP System" project focuses on implementing the Supporting Wellness at Pantries (SWAP) system in Feeding Northeast Florida mobile pantry, The Corner Market. The SWAP system promotes healthy food choices within the Corner Market by ranking food based on nutrients. Foods linked to increased risks of chronic diseases, such as saturated fat, sodium, and added sugars, can be easily identified with a red, yellow labeling system. Green encourages consumers to choose the food item often, yellow choose sometimes, and red choose rarely. Most processed and packaged foods are in the red and yellow category, and fresh fruits and vegetables are in the green category. Since this project is still ongoing, the results of my study are based on a research study by Stowers KC, Martin KS, Read M et al.1. This study demonstrates how the inventory of six pantries changes over a year with the implementation of the SWAP system. The study indicated that the average weekly pantry inventory had 28.35 more pounds of green-labeled food after a year of the SWAP system implementation.1 I believe that once the SWAP system is fully implemented in the Corner Market, the results from our project will similarly reflect the results of these studies, and we will thereby see an increase in green food selections. Reference: 1. Stowers KC, Martin KS, Read M, et al. Supporting Wellness at Pantries (SWAP): changes to inventory in six food pantries over one year. Journal of public health. 2020;30(4):1001-1009. doi:10.1007/s10389-020-01350-8

Professor Melissa Baron
Nutrition & Dietetics Department

Mediators of the Relationship Between Goal Endorsement and Overall Importance of Communal Goal Fulfillment

Sadana S. Mukundan, Jessica McKay

We examined whether cultural beliefs about what educational institutions think about STEM and the experiences these institutions offer mediate the association between beliefs about what goals these institutions endorse and whether participants believe it is important to fulfill these goals in their future careers. We had a total of 244 undergraduate students (205 women, 179 white) take a survey rating the types of experiences they were involved in at their high school and college, the perception of their institutions' goal endorsement, the perceived importance their institutions placed on goals, and the kind of goals they want to fulfill in future careers. Using Mplus , we examined two models. Model 1 tested if participants perceived their institutions to endorse communal goals. Whether that predicted the STEM-related experiences students have and the perceived importance of the institutions' communal fulfillment. Then we examined if these communal experiences and the importance of fulfilling communal goals predicted overall importance participants place in fulfilling communion in their careers. Model 2 tested

a similar interaction but excluded STEM-related experiences. Our analyses revealed that Model 2 was a better fit. Institutional goal endorsement predicted overall importance of communal fulfillment and perceived importance of communal fulfillment in college was a significant mediator. Perceptions of whether high schools and colleges value communion and believe that it is important to fulfill play a role in students' beliefs about the overall importance of fulfilling communal goals in a career.

Dr. Elizabeth R. Brown
Psychology

Cognitive Control and Racial Bias Reduction using fNIRS technology

Alexandro Gonzalez

This study explores the relationship between cognitive control and stereotype reduction training. Participants are divided into two groups: the stereotype-maintenance task group will be trained to associate a black face with a weapon and a white look with a cell phone, while the stereotype-reduction task group will be trained to associate a white face with a firearm and a black face with a cell phone. Functional Near-Infrared Spectroscopy is active during the training period to examine brain areas in the prefrontal cortex associated with cognitive control. After completing the training task, participants complete a Race-Weapons IAT to measure implicit bias. The investigated hypothesis states that stereotype-reduction training is successful when participants display cognitive control accompanied by decreased implicit bias. Compared to the stereotype-maintenance group, those who completed the stereotype-reduction training displayed higher OxyHb in the prefrontal cortex, indicating increased prefrontal activation and increased use of cognitive control. When comparing the IAT scores of both training groups, there was no display of decreased stereotype bias in either group despite higher cognitive control from the reduction group during training. IAT scores were analyzed based solely on participants' responses' accuracy and discounting speed with this data. With data being collected now, stereotype bias will be analyzed considering both speed and accuracy to ensure an accurate measure of participants' level of stereotype bias after training.

Dr. Katherine Hooper
Psychology

Cultural Mismatch Theory in First Generation College Students

Roshonda Bissainthe

U.S graduate programs have seen an increase in enrollment over the past 10 years. A factor of this is the increase in the enrollment of first-generation students (neither parent has a four-year degree) that currently make up over ¼ of graduate school students. Given that the culture of academia is independent and first-generation students are more likely to come from

interdependent backgrounds, the growing population of first-generation students likely will clash with current independent culture of U.S universities. The current research will examine whether first-generation college students as compared with continuing generation college students differ in their perception about a graduate school and does it matter whether the graduate program adheres to independent or interdependent norms. Participants were two hundred first-generation college students (define) between the ages of xx to xx (median age = xx);XX women, XX men. XX Asian Americans and Pacific Islanders, XX, XX Latinx, XX white, XX African American/Black; XX Underclassmen, XX Upperclassmen, XX Graduate/Doctoral Students). I predict that first-generation students, as compared with continuing generation students, will be more inclined to attend the ecopsychology that is described as being interdependent whereas continuing generation students, as compared with first generation students, will be more likely to want to attend the graduate program that is described as being independent. These findings increase knowledge of why independent and interdependent students are more successful at institutions that have environment similar to their background.

Elizabeth Brown
Psychology

Using Values to Indirectly Change Attitudes

Andrew (AJ) Likosar, Liana Chamberlain, Adalyn Graham, Katie Wilkinson, Krystiana Rego

The purpose of this study is to identify whether imagining social support helps moderate the effects of perceived stress. 125 participants were given a baseline stress measure, a life stress measure, and personality measures. Participants were then instructed to complete a writing task. The writing prompt split participants at random into four conditions: imagining supportive touch, imagining emotional support, imagining giving social support, and a control group. Participants' stress was measured again, and they were subsequently exposed to a stress task comprised of a five-minute speech recorded over Zoom. After the stress task was completed, task stress and task difficult were assessed. Results show that none of the imagined social support conditions had a significant impact on perceived stress. Results suggested that perceived social support was associated with decreased baseline stress and perceived task difficulty ($r = -0.21$, $p < 0.05$). Separately, neuroticism was correlated with task stress ($r = 0.35$, $p < 0.01$) and perceived task difficulty ($r = 0.36$, $p < 0.01$). In the future, this study could include an additional time point to measure when people return to baseline stress. A limitation of the study, since the beginning of the pandemic, is that Zoom allows for less control over extraneous variables. When back in person, physiological signs such as heart rate and blood pressure could also be measured to give a more accurate view of stress levels.

Dr. Paul Fuglestad
Psychology

Enviro Rights Map: Examining Regional Constitutional Environmental Provisions

Savanna Courtney-Durrett

Enviro Rights Map is a digital record of constitutional environmental provisions co-developed by Josh Gellers, Erin Daly, and Jim May. Currently, the Enviro Rights Map accounts for 140 jurisdictions at the national and subnational levels, reflecting the most recent environmental constitutional provisions. The website features 5 different categories of environmental provisions: Statement of Public Policy (SPP), Substantive Environmental Right (SER), Procedural Environmental Right (PER), Right to Water (RTW), and Right of Nature (RoN). The goal of this research was to determine if there is a most common regional environmental constitutional provision among the aforementioned five. First, the 140 jurisdictions' entries were reviewed by cross-referencing current constitutions from Constitute Project or World Constitutions Illustrated. If required, the entries were updated to match the constitution. Second, data were gathered from the entries for type of constitutional environmental provisions present. Third, the data were organized by region and compiled in this new frame. Fourth, the regional data were analyzed to determine if there is a most common constitutional environmental provision located in a given region. Based on analysis, Statements of Public Policy figured as the most common type of constitutional environmental provision across all regions. However, Europe and Central Asia were the only regions where this type of provision was on par with Substantive Environmental Rights (N=18). Further analysis on each type overall did not reveal a simple majority. Statements of Public Policy obtained the largest share, with 128 out of 284 total constitutional environmental provisions (44%). Substantive Environmental Rights were found in 91 out of 284 cases (32%).

Dr. Josh Gellers
Political Science and Public Administration

Multidisciplinary & Community-based Inquiry: Understanding Healthcare Barriers Faced by the Hispanic Community in Jacksonville

Stacey Harmer

This inquiry expanded our understanding of the needs of the Hispanic community in Jacksonville in relation to health and nutrition through community-based learning experiences. We developed an awareness of the challenges faced by the Hispanic community, especially in relation to those with a low level of English proficiency. We used multidisciplinary literature to gain a more comprehensive perspective on the barriers to health and nutrition, as well as the approaches created to address them. The literature includes sources from: social sciences, health science and medicine, and community-based service-learning. Through the multidisciplinary literature we were able to identify several themes that relate to our Hispanic community in Jacksonville: language barriers in healthcare with limited translation

services; food label literacy; demanding schedules that affect food preparation; access to fresh food via availability or cost constraints; outside influences, such as schools or work, that impact food choices. We were also able to understand the strengths and weaknesses of the different approaches to improving health and nutrition in communities. Community involvement in design of projects and cultural competency were crucial to addressing the necessities of the community. Our current progress is understanding some of the services we offer to the community in Jacksonville and examining the role the programs play in health and nutrition. This inquiry exemplified the importance and benefits to approaching challenges from a multidisciplinary perspective, so that we may better understand the variety of factors and needs that must be addressed in healthcare and nutrition.

Professor Nuria Ibáñez
Languages, Literatures and Cultures

Digital Communication Use Before and During COVID-19 Pandemic Among Residential Older Adults

Jared Santiago

Objectives: The COVID-19 pandemic caused significant changes to social connectedness. Due to the potential for digital communication technology to alleviate social isolation among older adults, we investigated its use among older adults before and during the COVID-19 pandemic. Methods: We performed a cross sectional study survey with convenience sampling to examine the study objectives. The study period was March 15 to April 16, 2021, among two Continuing Care Retirement Communities (CCRC) in Northeast Florida. The data was collected via Qualtrics and analyzed using Statistical Package for Social Sciences version 25. Demographics were measured using descriptive statistics for averages or frequencies for continuous or categorical variables, respectively. Chi-squared was used to examine study objectives. Results: One hundred and twenty-one people completed the survey and were included in the analysis. Chi-squared results suggest an association between using technology-enabled communication before and during the pandemic, (p-value <0.01). There were no significant changes in social media and text messaging platforms use, while increases were noted in Video Chat and Telephone use, 4.1% and 0.8% respectively. Perceptions of technology were 22.7% were favorable, 36% were neutral, and 37% were unfavorable. Forty-nine percent agreed that online communication did not contribute to loneliness and 45% preferred phone communication over other forms of technological communication. Conclusions: Communication methods remained consistent before and during the COVID-19 pandemic, with video chat and telephone slightly increasing in utilization. However, the results indicate that older adults recognize technology to maintain social connectedness during a public health crisis.

Dr. Cynthia White-Williams
EMHA, Center for Aging Research

Educate the Younger Generation about the Damage of Plastic to the Environment

Sephora Khoulalene, Noah Miller

Throughout the semester, we gave presentations at several elementary and middle schools, including Ocean Palms Elementary and Fletcher Middle School, to educate children about saving the planet including reducing plastic use. For his presentations we have presented how to wrap a green bag. lunch (plastic-free) and fast-fashion (middle school and Beaches Go Green clubs). These kids are the future of our world, so talking to them early about things like this is the best way to ensure that changes will occur in the decades to come.Along with the 2 UNF students involved with the group, there are also five high school clubs and two middle school clubs that are run by students that share the mindset of sustainability and working to educate everyone on improving our environment. Schools that currently have these clubs include Ponte Vedra High School, Nease High School, Fletcher Middle School, and several others. Thank you to Anne Marie Moquin to give me to possibility to achieve this project in our organization. I also need to thank Noah, who really support me during this journey. And I would like to thank Kelly Rhoden and the Institute of Environmental and Education at UNF to give me the opportunity to be of this Leader project.

Kelly Rhoden
Institute of Environmental Research

Conveying Historical Narratives using ArcGIS Storymaps: The Story of Jacksonville's Spanish American Battery.

Erin Ogrodnik, Eleanor Ascheman

Historical interpretation plays an integral role in site conservation as it provides narratives to spaces and features that may not be well understood on their own. The recent widespread use of Geographic Information Systems has allowed for the creation of new methodologies in interpretation, including the integration of spatial data. This project sought to convey the narrative of the Spanish American Battery located on the St. Johns Bluff in Jacksonville; we used ArcGIS Storymaps to create an integrative narrative detailing the development of the site and its surrounding features in a timeline format by combining text and historical maps compiled in the Cultural Land Report provided by the National Park Service. The historical maps served as the foundation of the project, which we supported with text-based evidence and current-day imagery. Because the Spanish American Battery is not currently open to the public, this project provides an opportunity to share the history of the site and provide spatial context without ever setting foot on the property. This has implications for other projects that may be hard to access but would benefit from public support.

James W. Taylor, Kelly Rhoden
Institute of Environmental Research and Education

Telehealth Disparity: Investigating the Causes for Low Utilization among Hispanic Patients

Hera Culiqi

Background: During COVID-19, telehealth was strongly encouraged to promote safe access to healthcare services, yet research suggests that disparity among Hispanic persons exists. In this study, we aim to investigate demographic, socio-economic, education, and behavioral causes for the low utilization among Hispanic persons. Methods: The COVID-19 Research Database Consortium provided data for the study. The study period was from March 2020 to April 2021. We examined claim records of 3.89 million unique Hispanic patients to investigate study objectives. Descriptive statistics used an analysis of variance and the chi-squared test for continuous and categorical variables respectively to compare demographic, socioeconomic, and health behavior characteristics. Multiple logistic regression was used to determine the odds of using telehealth services. Results: Results suggest that Hispanic patients who had a primary care physician, higher incomes, full-time employment, and private insurance were more likely to use telehealth. Patients who had unhealthy behaviors such as smoking, high alcohol consumption, and high school education or less, were less likely to use telehealth. Discussion/Conclusion: Hispanic persons that demonstrate characteristics that decrease the odds of using telehealth, many of these areas can be overcome. Overcoming modifiable risk factors is key to increasing the utilization and engagement of Hispanic persons in telehealth use.

Dr. Cynthia White-Williams, Dr. Richard Shang
Brooks College of Health

Health Disparities: An Epidemiological Evaluation into the Discrepancies of Socioeconomically Marginalized Communities.

Waheed Khalili

Health disparities are systemic issues that are disproportionately apparent within lower-income communities. They have significant detrimental effects on the health, well-being, and overall quality of life of those they impact. Many factors can influence an individual's susceptibility to health disparities. The Social Determinants of Health are a defining model utilized within Epidemiology to express this correlation. Income, educational level, and socioeconomic status can considerably shape the health trends and outcomes of a community. This presentation seeks to interpret the short and long-term effects of health disparities within marginalized and lower-income communities. This presentation will display the findings of an 18-month epidemiological research study in the Jacksonville area regarding the health trends, diseases, mortality/morbidity rates of disenfranchised demographics, and healthcare availability in the post COVID setting.

Dr. Leslie Kaplan
Hicks Honors College

The Feasibility of Phasing Out Single Use Plastics

Ruby Cox

This project aims to start the conversation around plastic usage on the campus of the University of North Florida from all sides: students, faculty, leadership and the community. We designed a survey to evaluate students' support surrounding single use plastics on campus. This survey was conducted with the assistance of the student government at their March Round Table discussion. Through this survey and its future results, we hope to create a Joint Resolution, which is a physical notion of awareness and support similar to a bill, showing student's awareness and passion for reducing single use plastics and encouragement for making more sustainable decisions. The response of the student body in the survey will show leadership that this is a topic students are passionate about and in support of. Therefore it will show that it is worth starting conversations for change. Our role in this project is to conduct the feasibility of reducing single use plastics at the University of North Florida and aims to start the conversation of what reducing single use plastics will look like at UNF. After speaking with members of the Sustainability committee at UNF & our Osprey Voice Survey, we found that there is major support for eventually phasing out single use plastics on campus from students, faculty and leadership. Many university members showed their support through asking questions and working with us to find out what we should do next, and many had amazing contributions to the future of more eco conscious choices, education, and initiatives.

Dr. Erin Largo-Wight, Dr. Heather Truelove
Brooks College Of Health

Examining Cortical Activation During a Self Monitoring Task

Hannah Thomas and Karil Friedman

Self-monitoring is a psychological phenomenon in which individuals attempt to regulate the way they present themselves in social situations so that they are perceived in the most favorable light by other people. High self-monitors are more adept at strategically managing their self-presentation and emotional reactions in social situations, whereas low self-monitors are less likely to adjust the way they present themselves in different environments. The current study aims to investigate how self-monitoring affects neural activity in the prefrontal cortex of the brain by using functional near-infrared spectroscopy (fNIRS), a non-invasive brain imaging technique. fNIRS uses two different wavelengths of near-infrared light to detect concentrations of deoxygenated hemoglobin and oxygenated hemoglobin, of which the latter is a measure of cortical activity. Participants viewed emotionally valenced images (positive, negative, and neutral) from the International Affective Picture System (IAPS) and performed one of three tasks: inhibiting their natural facial expressions, producing a facial expression appropriate to the shown image, and producing an expression inconsistent with the shown image. The expectation is that, when compared to low self-monitors, high

self-monitors will be better able to successfully regulate their emotions and, therefore, facial expressions, when viewing emotional imagery. By measuring brain activity during these tasks, the goal is to discover which brain areas are involved in self-regulatory processes and how activity in these areas may differ between high and low self-monitors. Currently, our data shows a trend of decreased orbitofrontal cortex activity in high self-monitors when they express emotions inconsistent with the emotional valence of the image.

Dr. Katherine Hooper, Dr. Paul Fugelstad
Psychology

Step Count Validity of Consumer Grade Wearable Activity Monitors During Aerobic Exercise Activities

Andrew Gomez, Akaecia Poole, Lena Elemam, Cristal Benitez

Interest in wearable activity monitors has increased with the general public and their use has been shown to elicit greater physical activity (steps per day) among sedentary individuals. It is necessary to validate and ensure accuracy of these activity wearable monitors. PURPOSE: To determine step count error during moderate and vigorous exercise on common aerobic exercise equipment. METHODS: Within our validation study of five different step count monitors volunteers were asked to participate in six aerobic exercises on fitness equipment while being video recorded from the waist down. Three activities were step-like (e.g., elliptical) and three were non-step-like (e.g., rowing). Step counts from each device were recorded before and after every exercise and steps were later hand counted from recordings which served as the criterion step measurement. Zero hand-counted steps were recorded for non-step-like activities. Steps taken during step-like activities were converted to percent of hand counted steps while steps during non-step-like activities were kept as raw step counts. T-tests (SPSS v.28.0) were used to determine significant difference. RESULTS: During step-like activities all monitors significantly underestimated steps for the moderate and vigorous conditions except for the Apple Watch in the moderate condition. For the non-step-like activities, all the monitors significantly overestimated step count. CONCLUSION: For step-like activities, monitors tend to under-estimate steps while non-step activities tend to over-estimate steps. It is likely that the greater overestimation during vigorous non-step-like activities was due to the greater motion occurring during this activity intensity.

Dr. Lindsay Toth
Clinical and Applied Movement Sciences

Neural Correlates of Political Ideology and its Influence on Emotional Processing: An fNIRS Study

Bailey Rawlinson, Edward A. Spiezio

The processing and regulation of emotions has long been a topic of interest in the field of neuroscience. Regions of the prefrontal cortex (PFC) play a significant role in the cognitive regulation of emotion. Many factors such as personality traits and political ideology have been implicated in emotional processing and have been shown to activate different areas of the prefrontal cortex or associated brain regions. Previous research has also indicated that asymmetries in emotional processing exist between differing political ideologies; notably, conservatives exhibit stronger negative reactions to negative stimuli compared to liberals. The more conservative the individual, the stronger the negative response. There are reasons to believe that this reaction is not restricted to only negative stimuli. As an extension of our previous research, which used fNIRS to study emotional processing while taking into account the self-reported degree of identification with social conservatism, the current study examines more elements of political ideology to investigate additional factors that are known to powerfully influence ideological and emotional processes. To measure emotional processing, we employ fNIRS to observe neural activity in the prefrontal cortex during presentation of positive, neutral, and negatively valenced images. FNIRS employs different wavelengths of near-infrared light to quantify levels of oxygenated hemoglobin within the cerebral cortex. Following the experimental phase, participants complete a questionnaires including various scales related to political ideology and personality. Building on our previous work, this study aims to focus more on various dimensions of political ideology and its influence on and relationship to emotional processing.

Dr. Katherine C. Hooper
Psychology

Waitressing: The Cost of the "Customer is Always Right" Mentality

Ashton Horton

Waitressing as a profession requires women be placed into traditional gender roles; they serve customers, they must be docile in the face of harassment, and they must dress in a conventionally attractive manner. The stereotypical gender roles women must perform as waitresses undoubtedly have psychological, emotional, and social impacts on them and society as a whole. Waitresses must compromise their natural instincts of self-preservation. They must cope with both the negative emotions resulting from harassment, and that waitressing perpetuates feminine gender stereotyping and misogyny. In order to measure how women have been impacted by waitressing, five in-person interviews were conducted to better understand the lives of waitresses. The research indicated waitresses experience verbal, physical, and sexual harassment daily, and struggle to reduce stress in the face of extensive emotional labor. Every waitress interviewed stated they would be leaving the

industry at some point; pursuing a life-long career as a waitress is unrealistic as it is too emotionally and physically taxing, even for veterans of the industry. Biases surrounding traditional feminine gender roles still prevail in the restaurant industry, and more must be done to create a working environment that is not rife with harassment and stereotyping. Restaurants can combat these biases through incorporating gender sensitivity training and by encouraging managers to take an active role in confronting and punishing harassment. Keywords: waitress, harassment, stereotyping, restaurant

Dr. Juan Salinas
Sociology, Anthropology, and Social Work

Investigating the Relationship Between TMAO and Dietary Factors in Adults Ages 35-64

Larissa DePasqua

According to the Center for Disease Control and Prevention (CDC), chronic disease is the leading cause of death in America with poor nutrition as a contributing factor.1,2 Elevated plasma levels of trimethylamine N-oxide (TMAO) increase inflammation within the body and are associated with an increased risk of diseases. TMAO blood tests are expensive, and having reliable, valid, cost-effective, and time-saving tools that evaluate diet and intake is important. Clients may underreport their intake,3 making combining methods of dietary data collection essential. Combining multiple dietary intake methods is a more effective approach than utilizing a single method when investigating the connection between diet and disease risk.4 Studies show an association between dairy, eggs, fish, red meat, and TMAO levels,5-7 but more studies are needed to support which animal foods pose the greatest risk and clarify the impact on inflammation in the body. This study aims to investigate the relationship between TMAO and dietary intake in adults, ages 35-64 years, who participated in the Happy Gut Study. 1. Center for Disease Control and Prevention. Chronic diseases in America. Center for Disease Control and Prevention website. Published January 12, 2021. Accessed September 24th, 2021. https://www.cdc.gov/chronicdisease/resources/infographic/chronic-diseases.htm 2. Toorang F, Sasanfar B, Esmaillzadeh A, Ebrahimpour-Koujan S, Zendehdel K. Comparison of validity of the Food Frequency Questionnaire and the Diet History Questionnaire for assessment of energy and nutrients intakes in an Iranian population. East Mediterr Health J. 2020;26(9):1062-1069. doi:10.26719/emhj.19.099 3. Osadchiy T, Poliakov I, Olivier P, Rowland M, Foster E. Progressive 24-Hour Recall: usability study of short retention intervals in web-based dietary assessment surveys. J Med Internet Res. 2020;22(2):e13266. doi:10.2196/13266 4. Solbak NM, Robson PJ, Lo Siou G, et al. Administering a combination of online dietary assessment tools, the Automated Self-Administered 24-Hour Dietary Assessment Tool, and Diet History Questionnaire II, in a cohort of adults in Alberta's Tomorrow Project. J Acad Nutr Diet. 2021;121(7):1312-1326. doi:10.1016/j.jand.2021.01.014 5. Crimarco A, Springfield S, Petlura C, et al. A randomized crossover trial on the effect of plant-based compared with animal-based meat on trimethylamine-N-oxide and cardiovascular disease risk factors in

generally healthy adults: study with appetizing plantfood-meat Eating alternative trial (SWAP-MEAT). Am J Clin Nutr. 2020;112(5):1188-1199. doi:10.1093/ajcn/nqaa203 6. Mei Z, Chen GC, Wang Z, et al. Dietary factors, gut microbiota, and serum trimethylamine-N-oxide associated with cardiovascular disease in the Hispanic Community Health Study/Study of Latinos. Am J Clin Nutr. 2021;113(6):1503-1514. doi:10.1093/ajcn/nqab001 7. Toorang F, Sasanfar B, Razeghi Jahromi S, et al. Validation of Diet History Questionnaire in assessing energy and nutrient intakes of Iranian population. Iran J Public Health. 2019;48(6):1074-1081.

Andrea Arikawa
Nutrition and Dietetics

Hydroponic System

Karston Gilmore

Ebb & Flow also known as flood & drain is a common technique of hydroponics that uses the method of flooding the hydroponics tank with water and nutrients and then draining after a set amount of time. This flooding and draining method happen periodically throughout the day using water pumps and a set timer. When the water is drained from the growing the tray, the roots of the plants are then exposed to the needed oxygen for respiration. Unless the system is built wrong or the correct parts are not used, hydroponics is an easy and simple system to use to grow crops. Hydroponics crops will sometimes grow faster than soil grown crops because of the flood of nutrients they receive throughout the day and the controlled environment. There are many versions of ebb & flow systems, the version we will be using at UNF is known as a flood table. The flood table system hydrates and provides nutrients to the crops from a reservoir connected to the table via pumps. When using a hydroponic system, the following factors need to be taken into consideration to ensure optimal growth: pH, temperature, size and type of plants, humidity, size of system, lighting, and growth media.

Kevin Anderson
Student Affairs Coordinator, Ogier Garden Coordinator

Health & Social Sciences

Graduate Research

Latino/Hispanic Cultural Values Impact on Research Recruitment

Lizbeth Vera

The lack of recruitment of ethnic minority populations in research has been a concurrent problem across different fields of scientific research, exacerbating health disparities. In addition, the need for research, treatments, and policies that include the diversity of the U.S. population is substantially growing, especially for the Latino/Hispanic populations who currently represent the largest racial/ethnic minority groups in the United States. A proposed solution is the inclusion of cultural values in the methodology of research and an increase in culturally sensitive practices. This mixed-method research project investigates and proposes preliminary themes on how core Latino values like Simpatia, Personalismo, Familiarismo, might impact recruitment in research, and the possible presence of heterogeneity within the community based on country or heritage.

Dr. Jody Nicholson
Psychology

Under the Influence: Common Trends Across Popular Social Media Influencers' Posts and their Influence on Mental Health

Hannah Johnson, Gracie Bowden, Sydney Hamrick, Mackenzie McGehee, Angela Zaher

This study follows the posts of six of the most followed social media influencers on two of the largest social media platforms; Instagram and TikTok. The purpose of this study was to research what the most common trends among the highest followed social media influencers (SMI) are and the impact on the mental health of the consumers of these posts. The compilation of data consisted of investigating the posts starting from the date of February 14, 2022, and tracing back the previous 30 posts of each of the three most-followed SMIs on Instagram and TikTok. The posts were explored and organized into four categories- health and wellness, entertainment, beauty, and social engagement, as well as 14 subcategories depending on the content of each one of the 180 collective posts. The results of the study further elucidate the trends and the themes presented by the SMIs, with the category of entertainment being the highest.

Dr. Tes Tuason
Clinical Mental Health Counseling Graduate Program – Brooks College of Health

#CBDSkincare: Cannabidiol (CBD) Skincare Product Portrayal on Instagram

Cristina Watson

Cannabidiol (CBD), a non-psychoactive component of cannabis, is marketed as a treatment for many health conditions and sales surpassed one billion dollars in 2020. Despite murky legality and limited safety and efficacy testing, CBD skincare products are widely available. This study used content analysis to examine how CBD skincare products were portrayed on Instagram. Using the search terms CBD skincare and CBD skin, researchers sampled every fourth post from the top 1000 posts to collect 210 relevant posts. Two researchers coded posts and interrater agreement was established at 91%. Of the sample, the majority (91.6%) of posts positively portrayed CBD skincare with claims including moisturization, anti-aging, and texture improvements. Many posts cited scientific studies and claimed CBD products were as good or better than proven products such as hyaluronic acid and retinoids for skin improvements. In this sample, user engagement was high with 85.2% of posts being saved and links to commercial sites selling CBD products, personal blogs, and social media accounts. This study revealed widespread acceptance of CBD skincare products. Instagram posts portrayed CBD in skincare as a positive and safe (even better) alternative to other skincare products. However, there is evidence of unsupported and incomplete information being shared.

Dr. Julie Williams Merten
Public Health

Repeating Patterns: A Content Analysis of Serial Killers and Childhood Sexual Abuse.

Derrica Curtis, Brice Marks, Alyssa Godak, Erin McDyer

Previous studies compare childhood abuse and trauma to serial killers, but many focus on childhood abuse from a general perspective. This study aims to analyze twelve serial killers who experienced childhood sexual assault (CSA) and determine whether CSA could connect to the type of serial killer and the sexual assault inflicted on their victims. The twelve serial killers were chosen based on if they had experienced CSA. Multiple third-party sources like biography.com and murderpedia.com were used to collect data regarding each serial killer's childhood and murders, including types of sexual abuse, frequency of attacks, gender of the killer, gender of victims, and more. The categories were compared to see if any themes between constructs existed. This study is a consensual qualitative research paradigm conducted utilizing critical theory methodology. Through content analysis the findings support the hypothesis that there could be a connection between serial killers who were sexually abused as children are more likely to be hedonistic serial killers. The results display majority of serial killers chose murder victims who were the same gender as those who had sexually abused them. All serial killers used in our data who sexually assaulted their victims after they had died had all experienced recurring sexual abuse as a child; they were all

hedonistic killers. Limitations in this study included a lack of biographies, uninvolved third-party sources, and unreported instances of CSA. This study indicates the need for adequate early mental health care interventions for children who are victims of sexual assault and survivors of childhood sexual assault.

Dr. Tes Tuason
Clinical Mental Health Counseling

Associations between Academic Self-Concept, Perfectionism, Parental Expectations, Academic Performance and Satisfaction among Undergraduate STEM Majors

Jessica Lewis

The intention of this research is to further our understanding of the underlying mechanisms surrounding the gender gap plaguing the STEM community. This study assesses the extent to which patterns of perfectionism, perceived parental criticism/expectations relate to academic performance satisfaction and academic self-concept of incoming first year undergraduate students. It also aims to find any moderation between gender and major. 109 participants completed the demographic survey, 20-item math exam, perfectionism, and academic self-concept measures. Perfectionism was measured using the Frost Multidimensional Perfectionism Scale (FMPS). The subscales include Doubts about Actions, Concern over Mistakes, Parental Expectations, Parental Criticism, Personal Standards, and Organization. Academic Self-Concept was measured using the Academic Ability subscales of the Personal and Academic Self-Concept Inventory. Academic performance was measured through a 20-item practice math exam. Academic performance satisfaction will be measured using a 6- point Likert scale will be used to rate the degree to which they are satisfied with their lab task performance. Using the same scale, they indicated their perceptions of their parents' satisfaction with their performance. Two mediation analyses will be conducted to explore academic self-concept as a potential mediator on the relationship between perfectionism and exam performance as well as satisfaction. A two-way MANOVA will be utilized to explore differences in performance and satisfaction among male and female STEM and non-STEM students. A two-tailed correlational analysis was conducted to assess intercorrelations among study variables and the strength and direction of any associations. The proposed research will benefit the academic community by assessing underlying mechanisms related the lack of university students choosing to pursue STEM and help implement interventions to mitigate these effects.

Dr. Susan Perez
Psychology

In Sickness & in Health: Interactions of Romantic Dyads' Health Attitudes & Behaviors

Madison Reasonover, Hollie Minichiello

The Actor-Partner Interdependence Model (APIM) captures interdependence, or interactions between cognitions, behaviors, and emotions, within interpersonal relationships. Research supports interdependence between romantic partners, which is often influenced by the more powerful partner who dominates decision-making (Howland et al., 2016; Farrell et al., 2015). The current study investigated interactions between health attitudes and behaviors (exercise and eating) of male and female romantic partners, and power as moderator. Forty-four heterosexual romantic couples, with an average relationship length of 28.72 months, completed a series of measures including the Overall Relationship Power Inventory, Exercise Identity Scale, Healthy-Eating Identity Scale, and a modified Health Practices Scale. APIM actor effects (person 1→ person 1) and partner effects (person 1→ person 2) were assessed using regressions and moderation analyses within SPSS. Female exercise attitudes predicted female exercise behaviors; male exercise attitudes predicted male exercise behaviors; and male eating attitudes predicted male eating behaviors (p's<.001). Additionally, female exercise attitudes predicted male exercise behaviors, and this effect was moderated by female power, such that female attitudes were more predictive for those higher vs. lower in power (p's<.001). Female eating behaviors predicted male eating behaviors (p <.05), but this effect was not moderated by female power. No male partner effects–male health attitudes predicting female health behaviors–were significant. Thus, female power may promote self-expansion and amalgamation of health attitudes in male exercise behaviors. Health interventions should promote increased attitude-behavior consistency within the individual and between romantic partners. Continued data collection and assessment of self-monitoring is recommended.

Dr. Paul Fuglestad
Psychology

Theory of Planned Behavior Predicting Single-Use Plastic Behavior

Hollie Minichiello, Juliette Hill, Amy N.S. Siuda Ph.D., Shannon Gowans Ph.D., Kelly Debure Ph.D., & Jesse Sherry Ph.D.

Background: The increasing production and consumption of single-use plastics has created devastating consequences on the natural environment and human health. Improper disposal of single-use plastics has led to increased numbers of plastics throughout waterways, giving rise to far-reaching side effects. Therefore, interventions that consider human behavior are most effective when mitigating plastic pollution (Jia et al., 2019). Application of behavior theories, such as the Theory of Planned Behavior (TPB) allows us to investigate motivational factors driving single-use plastic consumption intention. In this model, attitude, subjective norms, and perceived behavioral

control form intention establishing the pathway to behavior. The purpose of this study is to investigate the use of app interventions on single-use plastic intention. Method: A census of freshman students from two Florida coastal campuses, the University of North Florida, and Eckerd University were invited to complete an inclusion survey as part of a larger funded study on single-use plastic behavior. Our sample was divided into a treatment (n = 68) and a control group (n = 84). Our treatment group was directed to use an app to record their use and refusals of plastic items during a week-long challenge to reduce plastic consumption. Of the interested participants, 165 students were invited to complete a 110-item survey guided by an expanded version of Theory of Planned Behavior (TPB) during the week of November 8, 2021. In addition to the TPB constructs (attitude, subjective norm, and perceived behavioral control), constructs from the expanded model (moral obligation, self-identity, and descriptive norm) were measured in relation to single-use plastic behavior. Single-use plastic usage was measured by participants' independent tracking of snack wrappers, straws, cups, lids, take-out containers, bags, utensils, bottles, masks, and hygiene products consumption throughout the week. Results: 104 of the 165 students (63% response rate) completed the expanded TPB survey. The TPB regression model explained 24% of the variance in single use plastic intention, $F(3, 100) = 10.630$, $p < .001$, with attitude toward behavior ($B = .324$, $p < .001$), subjective norms ($B = .118$, $p = .038$), perceived behavioral control ($B = .256$, $p = .006$), and campus ($B = -.629$, $p = .001$) as significant predictors. The expanded TPB regression model explained 60% of the variance in single use plastic intention, with moral norm ($B = .434$, $p < .001$), self-identity ($B = .338$, $p < .001$), perceived behavioral control ($B = .215$, $p = .014$), and campus ($B = -.356$, $p = .035$) as significant predictors, $F(6, 97) = 21.453$, $p < .001$. Discussion: While recycling single-use plastic is common behavior, it does not stop plastic production and pollution. Therefore, implementing behavior change interventions based on the Theory of Planned Behavior can predict single-use plastic reduction intention, specifically predictors of campus, perceived behavioral control, moral norm, and self-identity. Given that, future studies should investigate additional behavioral interventions to reduce single-use plastic consumption.

Heather Barnes Truelove, Ph.D., Erin Largo-Wight, Ph.D.
Psychology, Department of Public Health

Sexually Transmitted Diseases among Sexual Minority Youth in Duval County

LeAndra Ilugbusi, Alexis Thomas

Sexually Transmitted Diseases (STDs) are more common among sexual minority youth than non-sexual minority youth. Sexual minorities include individuals who identify as gay, lesbian, bisexual, or those who are unsure about their sexual orientation. This descriptive review was conducted to examine bacterial STD rates in Florida and Duval County among the high school population and to identify a targeted program for sexual minority youth that will improve STD prevention efforts. Data were obtained from the Youth Risk Behavior Survey for years 2013, 2015, 2017, and 2019. STD

data were obtained from Florida Charts and analyzed using Excel. A review of the literature was conducted to identify an appropriate prevention program. During each of the time periods observed, Duval County STD rates were higher than the average for the state of Florida. Duval County and Florida both showed an increasing trend in students identifying as a sexual minority. Based on the evidence, we recommend implementing a program like Planned Parenthood's IN-cluded. This evidence-based sexual health education program is designed specifically for LGBTQ+ youth and is grounded in the Health Belief Model theory of change. This program works with facilitators and health centers to combine LGBTQ+ youth-friendly health services and inclusive sexual education. IN-cluded aims to lower STD rates amongst LGBTQ+ youth ages 14-19 years and was assessed by a randomized controlled trial. One year after the program, participants showed significant positive differences pertaining to sexual behaviors, access to care, sexual health knowledge, and health care self-efficacy.

Dr. Sericea Stallings-Smith
Department of Public Health

Heart Rate Validity of Consumer Grade Wearable Activity Monitors Following Aerobic Exercise

Cristal Benitez

Heart rate (HR) has been shown to vary across wearable physical activity monitors. In this study, we compared HR from several wearable activity monitors to a Polar HR monitor (criterion) during recovery from aerobic exercise. PURPOSE: To determine monitor reported HR error immediately following aerobic exercise and during heart rate recovery using several common aerobic fitness machines at moderate and vigorous intensities. METHODS: Five healthy adults from the University of North Florida (age 25± 3.4 yr, 80% female, BMI kg /m2 25.5 ± 4.6) were recruited for the study. For day 1 and 2 of data collection, the Polar monitor was affixed around the chest and served as the HR criterion. Each wrist monitor (Apple Watch Series 5 (AP Series 5) , Fitbit Sense (FB Sense) , Fitbit Inspire HR (FB Inspire) , Garmin Vivosmart 4 (GM Vivosmart) , and Fitbit Charge 4 (FB Charge) were affixed to either the left or right wrist, with a maximum of two monitors per wrist to monitor HR during recovery. Participants were asked to complete prescribed activities for three-minutes at moderate and vigorous intensities. Heart rate data were collected from each monitor. T-tests were conducted using SPSS version 28.0. RESULTS: For moderate and vigorous intensity at HR 0 sec, all monitors under-reported HR (mod 86.4-97.1%; vig 77.4-95.1%) of criterion HR. Moderate and vigorous intensity at HR 60 sec three devices underestimated HR (mod 99.5-99.7%) and (vig 93.9-99.9%). CONCLUSION: Overall, HR accuracy improves during heart rate recovery compared to assessments immediately following exercise.

Dr. Lindsay Toth
Clinical and Applied Movement Sciences

Not All in Your Head: Healthcare Experiences of Intersex Individuals Through Reddit

Ericka Vargas, Emma Ambler, Hannah Lovett, Mia Davis, and Qiarah Ford

Intersex autonomy and care standards have historically been ambiguous, resulting in a diverse scope of intersex healthcare experiences. Intersex people are those who are born with sex traits that "do not meet medical and social norms for female or male bodies." Intersex persons are often subjected to hazardous, unregulated, and discriminatory medical treatments. While it is uncommon, some medical experts advocate for intersex people's well-being and view gender as a continuum rather than a binary. The goal of this study was to discover specific healthcare themes addressed by intersex people on the anonymous social media platform Reddit in order to analyze first-hand reports of intersex people's healthcare experiences. The research framework was Constructivist Theory, and the data analytic methodology was Phenomenological and Consensual Qualitative Research (Heppner et al., 2016). Our research team examined 100 Reddit postings between October 1, 2021, and February 11, 2022. Of this sample, we determined 30 posts to be healthcare-related, thereby meeting our qualifying requirements and warranting further analysis. Hormones, Familial Support, Medical Testing, Surgery, Access-to-Healthcare, and Patient-Provider Relationship were the six themes identified based on our findings. To establish standards for assigning each post to the appropriate category, boundaries and definitions were constructed for each theme. The preponderance of the analyzed healthcare experiences were negative, with the most common theme being the Patient-Provider Relationship. This study recommends that future research focuses more on intersex individual's healthcare experiences so that medical and healthcare professionals can better understand the stigmatization and barriers to care intersex people face.

Dr. Tes Tuason
Department of Public Health

Thematic analysis suggests dementia caregivers need nutritional support from a Registered Dietitian Nutritionist (RDN

Adremae Alotaya

Purpose: The aim of this study is: 1) investigate how being a caregiver to a loved one with dementia has affected the caregiver's nutritional status; 2) determine the recommended components of a dementia caregiver intervention program. Method: A qualitative approach was used to evaluate caregivers (CG) of dementia patients (n=28) and healthcare professionals (HP) that specialize in dementia care (n=24). Following the University's IRB approval, the Principal Investigator conducted focus groups guiding participants through a series of questions regarding nutrition knowledge, concerns and eating patterns of both the caregiver and individual with dementia. Trained

assistants were used for transcribing and coding of transcripts in the thematic analysis of the focus group data. Results: Main nutritional concerns for both groups (n=52) were forgot/ lack desire to eat (52%), forgot certain foods (50%), lack knowledge (44%), weight change (42%) and other health issues (36%). Strategies that have worked in the past included supplements (27%), attractiveness of meals (23%), and cues (17%). Caregivers were impacted by stress (29%), putting self-last (25%) and exhaustion (19%). Caregivers and healthcare professionals agree that education/resources (40%), caregiver self- care (33%), and support groups (21%) are among the top three themes to address in a future program for dementia caregivers. Conclusion: Findings from the research aligns with the hypothesis that caregivers of loved ones with dementia need nutrition support. Implications of practice from the research establishes a framework for an intervention program and a need for further research to develop said program

Corinne Labyak, PhD, RDN, LD/N
Nutrition and Dietetics

STEM Inqueery: The Role of Femininity in Communicating that LGBTQ Folks Belonging in STEM

Jasmine Elise Graham

Women and other minority group members do not attain higher degrees in science, technology, engineering, and mathematics (STEM). STEM is stereotyped as a non-LGBTQ male, agentic (self-focused), and uncommunal (not other-oriented) field. LGBTQ folks feel STEM values masculinity, not femininity, but LGBTQ folks highly value both. Perceptions of communal opportunities bolster STEM motivation; feeling isolated hinders STEM belonging. When STEM is believed to provide communal opportunities, it is positively related to expectations for STEM success and then (future) STEM motivation for non-LGBTQ women and LGBTQ folks. For LGBTQ folks, feminine gender expression is negatively related to STEM belonging and then (future) STEM motivation. We aimed to replicate this effect by adding a measure of perceived femininity of STEM with 254 folks (85 LGBTQ Folks, 84 Non-LGBTQ Women, 85 Non-LGBTQ Men) recruited from MTurk. Overall, communal opportunities were positively and feminine expression of self was negatively related to personal belonging and expectation for success in STEM; both personal belonging, not expectation for success in STEM, were related to (future) motivation to pursue STEM. However, for LGBTQ folks, communal opportunities were positively related to personal belonging in STEM, and personal belonging in STEM was related to (future) motivation to pursue STEM. Further, communal goals were positively related to expectation for success in STEM; however, expectation was not related to (future) motivation to pursue STEM. In conclusion, if STEM were to have more femininity and communal opportunities, it would boost personal belonging within STEM and motivation to pursue STEM.

Dr. Elizabeth Brown
Psychology

Assessment of Backward Walking Speed in Clinical Research: A Literature Review

Sarah Cordier

In clinical populations with mobility decline, prior studies report that a novel and simple assessment of Backward Walking Speed (BWS) can reveal distinct balance and mobility deficits masked by other assessments. While evidence suggests clinical utility of BWS as an outcome measure, it is unclear in which clinical populations BWS has been tested, the psychometric measures that have been established, the quality of research designs, and what testing protocols may have been used. Therefore, the purpose of this study is to systematically review the literature to describe how BWS has been used and reported in the literature. A complete review of the literature was performed on PubMed, PEDro, and CINAHL of published articles using the keywords "backward walking" and "backward walking speed". Results of the review showed that reliability has only been established in three clinical populations. Additionally, while the outcome measure BWS has been validated in several clinical populations, studies have been low statistical power and employed weak research designs. The majority of studies have been descriptive and testing protocol varies greatly across studies. Overall the results of this review clearly highlight that the variability in testing methodology greatly limits the comparison of BWS across clinical research studies. Future studies should establish BWS across different clinical populations. Importantly, there is an urgent need to validate a standardized protocol to measure BWS to minimize testing variations in clinical research.

Dr. Chitra Balasubramanian
Physical Therapy

Adaptive Memory: Richness of Encoding as a Possible Underlying Mechanism of The Threat Effect

Anthony Hall

In recent years, a growing body of research suggests that the human memory system has adapted to recall information that would have been vital to our ancestors' survival. One area of importance is animacy, where animate objects are better remembered than inanimate ones. From the study of animacy a new area of interest came about; perceived threat of stimuli. It was suggested that some of the stimuli used in previous research could be perceived as more threatening than others which could be a potential confound. This research lead to a potentially new phenomenon, the threat effect, which suggests that threatening stimuli are better remembered than nonthreatening stimuli. The current research attempts to examine richness of encoding as one possible underlying mechanism of this novel threat effect. In this study, participants were asked to generate ideas for each word of a word list and then later recall as many words as possible that the participants had generated ideas for. The results of this study provide further evidence of animacy and threat effects on recall. Threatening items generated more ideas than non-threatening items. The effects of this idea generation

also mediated recall for threatening items, provides evidence for richness of encoding being one plausible underlying mechanism of the threat effect. This study did not replicate findings of past research that showed greater idea generation for animate items when compared to inanimate items. This study also failed to replicate the mediation found previously of idea generation on free recall of animate words.

Dr. Juliana Leding
Psychology

"Pandemic Dating is Killing My Buzz": A Qualitative Study

Jack Davis, Kameela George, Taylor Hovancik, Angelica Witherspoon, Rosalyn Zacarias

This qualitative research study sought to discover commonalities between individuals and their various dating experiences during the COVID-19 pandemic. This study utilized a constructivist theory framework to gain insight into individuals who have gone through similar experiences. Based on prior research, it was initially assumed that feelings of depression, loneliness, and social isolation were going to be discussed most frequently in posts that were analyzed. Using keywords, 100 posts were collected using a popular social media site, Reddit, that provides a forum for users to post anonymously. The data was coded using consensual qualitative research methodology and then categorized into four overall themes: looking for community, safety concerns, interpersonal conflicts, and intrapersonal struggles. Of the 100 posts analyzed, looking for community was seen at a higher percentage than other themes at 41%. This led the researchers to conclude that during the global pandemic social media was used as a method to find support and human connection. 33% of posts showed themes related to interpersonal conflict, highlighting the strain on relationships during increased isolation. Lastly, themes of safety concerns and intrapersonal conflict were present but not as salient as the others mentioned. This research shows the influence of COVID-19 on the experiences of individuals who are trying to navigate romantic partnership during unprecedented times.

Dr. Tes Tuason
Public Health

The Influence Of Social Class, Gender, And Race On The Relationship Between Stereotyping And Prejudice

John F Sperry IV

The intersectional invisibility hypothesis (IIH) posits that people view those with multiple subordinate group identities (i.e., Black women) as non-prototypical members of their respective identity groups (Purdie-Vaughns & Eibach, 2008). This non-prototypical status means social cognition about minority men may dominate group-level categorization, stereotyping, and

prejudice. Indeed, photos of Black women are categorized as Black more slowly than photos of Black men (Thomas et al., 2014). Also, stereotypes associated with Black people have more overlap with the stereotypes associated with Black men than Black women (Ghavami & Peplau, 2013). Finally, stereotypical bias against Black men is the driving force for prejudice against Black people (Phills et al., 2017). However, stereotypes about rich Black women might be an exception.(Sperry & Phills, 2019). Negative stereotypes of rich Black women are related to prejudice against Black people but stereotypes of rich and poor Black men, or poor Black women are not. The present research replicates and extends these findings by investigating how stereotypes about middle-class Black men and women are related to prejudice against Black people. White participants will generate and evaluate stereotypes about lower-class, middle-class, and upper-class Black and White men and women. Then, participants will indicate their prejudice against White and Black people. I predict that prejudice against Black people will only be related to stereotypes about upper-class and middle-class Black women. These findings will have implications for developing micro-targeting strategies to reduce biases against upper, middle, and lower-class Black people.

Dr. Curtis Phills
Psychology

Examining the Relationship Between Lateral Rotational Broad Jumps and Bat Speed for Collegiate Baseball Players

Brennen Hogan

Strength and conditioning professionals commonly incorporate field-based (FB) exercises into programs to transfer skill patterns to a specific sport movement. FB exercises such as a lateral rotational broad jump (LRBJ) are being implemented more frequently, the impact they have on complex, sequential sport movement patterns remains unknown. PURPOSE: The purpose of this study was to examine the effect of LRBJs have on bat velocity and peak hand speed in collegiate baseball players. METHODS: Thirteen collegiate baseball players (age: 20.2 ± 1.8 years, height: 180.3 ± 6.7 cm, mass: 86.7 ± 10.8 kg) completed two testing sessions, each session was separated by a period of 48 hours. The initial session consisted of participants completing a dynamic warm-up (WU) prior to performing LRBJs. Each participant completed two LRBJs on dominant and non-dominant legs. Each jump trial was separated by a period of 30 seconds. The 2nd session involved collecting swing measurements of interest. Participants completed an on-deck WU prior to completing five swing attempts with their individual game bat (33in/30 oz, 34in/31oz). Each participant was instructed to stand in the batter's box as they would in a game situation while the investigator placed a tee in the middle of their respective strike zone. Each participant was instructed to swing with maximal effort and to hit a line drive over the shortstop or second baseman's head depending on which side the athlete hit from. A 20 second rest period separated each swing trial to mimic the time between pitches. A blast motion sensor was used to collect swing

metrics of interest for each swing trial. The three best swing attempts were taken based on the fastest bat velocities of each participant. Researchers classified LRBJs previously collected into their lead or trail leg based on their respective batting stance. A series of Pearson's correlation coefficients were used at an alpha level of $p<0.05$ to determine if a significant relationship was found. RESULTS: A negative association (-0.538) was found between LRBJs of the trail leg on bat velocity with a significant ($p = 0.029$) interaction present. No other significant relationships were observed. CONCLUSION: Strength professionals can use this data to incorporate multi-planar exercises into training programs to help aid in bat velocity of collegiate baseball players.

Dr. Charles Williams
Clinical and Applied Movement Sciences

The Effect of Perfectionism on Views of the Self in Athletes

Hollie Minichiello, Madisen Reasonover

Increased levels of trait perfectionism have previously been linked with maladaptive emotion regulation techniques and overall lower levels of self-esteem. The current study aimed to investigate whether maladaptive regulation techniques (self-blame, rumination, catastrophizing, and blaming others) mediate the association between self-oriented and socially prescribed perfectionism and self-esteem. Two hundred and forty-nine, primarily white, female participants completed a series of questionnaires measuring self-esteem, perfectionism, and emotion regulation. PROCESS macro for SPSS was used to examine the relationship between perfectionism and self-esteem through adaptive and maladaptive emotion regulation, using parallel mediation model 4. The indirect effect of self-oriented perfectionism and self-liking through maladaptive emotion regulation techniques was significant, -.161, 95% CI [-.241, -.078]. The indirect effect of self-oriented perfectionism and self-competence through maladaptive emotion regulation techniques was significant, -.061, 95% CI [-.097, -.029]. The indirect effect of socially prescribed perfectionism and self-liking through maladaptive emotion regulation techniques was significant, -.161, 95% CI [-.234, -.096]. The indirect effect of socially prescribed perfectionism and self-competence through maladaptive emotion regulation techniques was significant, -.058 95% CI [-.092, -.031]. Using proper emotion regulation techniques is imperative in avoiding feelings of pressure from within and from those surrounding you. These findings should be used to guide future research and combat overall mental health declines due to self-oriented and socially prescribed perfectionism.

Dr. Paul Fuglestad
Psychology

Potential Mediating Effects of Social Support and Physical Activity on Cognitive Function and Mortality Risk

Madeline Zipperer

Low cognitive function has been shown to be an independent predictor of all-cause and cardiovascular disease (CVD)-related mortality. However, there is limited evidence examining whether social support network size and physical activity mediate this association. PURPOSE: To examine the potential mediating effects of social support network size and total physical activity volume (TPAV) on cognitive function and all-cause and CVD-related mortality risk in a large, nationally representative sample of U.S. adults. METHODS: Study sample (N =2,550) included older adult (≥ 60 years of age) participants in the 1999-2002 National Health and Nutrition Examination Survey. Quartiles of cognitive function were created using Digit Symbol Substitution Test scores. Social support network size was determined using the number of reported close friends. TPAV was determined from self-reported domestic physical activity, transportation physical activity, and leisure time physical activity. RESULTS: Cox proportional hazards regression analysis revealed an approximate 3-fold increase in all-cause and CVD-related mortality risk in participants in the lowest quartile of cognitive function, compared to the highest quartile of cognitive function. These relationships are independent of social support network size and TPAV. Linear and non-linear inverse dose-response relationships were also revealed between cognitive function and increased all-cause and CVD-related mortality risk, respectively (P for trend for both P < 0.0001). CONCLUSION: In a large, nationally representative sample of U.S. older adults, low cognitive function was associated with increased all-cause and CVD-related mortality risk. However, both relationships were independent of social support network size and TPAV.

Dr. Ryan Richardson, Dr. James Churilla, Dr. Jessica Stapleton
Clinical and Applied Movement Sciences

Sedentary Time and Prescription Medication Use in United States Adults: 2017-2018 NHANES

Ciarra Boyne

Prescription medication usage has been used as a predictor of disease prevalence and overall health status. Evidence suggests an inverse relationship exists between increased medication usage and physical activity participation. However, there is limited evidence examining the relationship between sedentary time and increased prescription medication usage in adults. PURPOSE: Examine the associations between sedentary time and increased prescription medication usage in a large nationally representative sample of U.S. adults. METHODS: Study sample (n=3,022) included non-pregnant adult (≥ 20 years old) participants in the 2017-2018 National Health and Nutrition Examination Survey (NHANES). Self-reported minutes per day of sedentary time were converted to hours per day of sedentary time. The dependent variable was increased medication usage (≥ 5 medications). RESULTS: Analysis

revealed that for every hour of sedentary time, there was a 5% greater odds of increased medication usage (Odds Ratio 1.05; 95% Confidence Interval 1.01-1.08, P-value=0.014). A significant positive dose-response relationship was seen between sedentary time and prescription medication use (P for trend <0.0001). CONCLUSIONS: Our findings suggest increased sedentary time is associated with increased prescription medication usage among a large nationally representative sample of U.S. adults.

Dr. James Churilla, Dr. Ryan Richardson
Clinical and Applied Movement Sciences

Turning to TikTok: The Evolution of Thinspiration

Sara Buchanan, Emily Hart, Dalande Leger, Kierre Paramore, Kayliegh Ratashak

Thinspiration is defined as a type of social media content that promotes and motivates individuals who seek a certain body type as a desire for perfection. This type of content is mostly found on social media sites and often encourages disordered eating and poor body image. Past research has focused on more explicit eating disorder content through social media sites such as Twitter and Tumblr; however, in recent years, social media sites have implemented more restrictions and blocked this more obviously problematic content. Unfortunately, "fitspiration" and other more covert forms of this content have taken over online spaces. This qualitative study analyzed the presence of more covert, yet still influential thinspiration on Tiktok. Researchers began by analyzing a sample size of 91 videos using the hashtags: #ed, #whatIeatinaday, #dreambody, #wideribcage, and #thatgirl. Based on previous literature defining characteristics of traditional "thinspiration", researchers watched each video to determine what variables were present. From this sample, it was discovered that 79.1% of the sample size qualified as thinspiration based on the established categories. Researchers also analyzed the top liked comments to determine whether viewers were endorsing, not endorsing, or remained neutral regarding the message or content of the video, and found that 59.3% of comment sections endorsed the video's message. This study indicates that although more explicit eating disorder content has been blocked, thinspiration has been rebranded and still has an overall negative impact on social media users.

Dr. Tes Tuason
Public Health

Biology, Physics, & Chemistry
Undergraduate Research

Computational Methods for the Determination of Analytical Ground-State Solutions to the Heisenberg Hamiltonian

James Taintor

Using a combination of computing methods and a Heisenberg Hamiltonian, we can rapidly iterate and determine ground states for a lattice. One of the key problems identified in the development and research of spin waves is calculating ground states for various spin configurations of a lattice. Most magnetic ground states are currently determined numerically using either first-principles methods or computational algorithms, while analytically solving for the ground state of a lattice is done manually. This program aims to automate this labor-intensive process that is needed for the simulation of that spin-wave dynamics. First, the various spin configuration energies are determined by incorporating the lattice structure and spin interactions. Then, the different energy equations are compared and plotted to determine a magnetic phase diagram for specific interaction parameters of the selected lattice. Finally, we can calculate the spin-wave dynamics once the proper ground state is determined.

Jason Haraldsen
Physics

The Role of fgf8 in Tardigrade Development

Kennedi Light

Tardigrades are microscopic animals, ranging from 50 microns to 1200 microns. We are interested in how the highly derived body plan of Tardigrada develops. Fibroblast growth factor 8 (fgf8) codes for a highly conserved developmental signaling ligand. This gene is known to regulate the development of the gut in many animals. Here we investigated the developmental role of this gene in the tardigrade species Hypsibius exemplaris. We identified a single ortholog of fgf8 in tardigrade genomes using BLAST search and phylogenetic analyses. This ortholog encoded an FGF domain indicative of fgf8. We determined the expression pattern of this gene in H. exemplaris by in situ hybridization. We detected the expression of fgf8 in the developing gut. Additionally, we identified a segmental expression pattern of fgf8, which suggests that this gene is regulating the development of segmental features in H. exemplaris. Next, we plan to implement RNA interference to determine the precise developmental functions of fgf8 in H. exemplaris.

Dr. Frank Smith
Biology

Effects of Strain on the Electronic and Phononic Properties of Fe Intercalated TaS_2 Using Density Functional Theory

Drew Duncan

Intercalated metal monolayers have interesting electronic, magnetic, and phononic properties that may provide potential technological applications. In this study, we examine the effects of stress and strain on the properties of Fe intercalated TaS_2. Using density functional theory, we determine the electronic band structure, density of states, and phonon spectra for 2H – TaS_2, Fe_1/4 – TaS_2, and Fe_1/3 – TaS_2 and the effects of isotropic and uniaxial strain. Through an analysis of the systems, we show how stress shifts the phononic modes of the Fe atoms.

Dr. Jason Haraldsen
Physics Department

Biological Synthesis of Novel Diketopiperazine Anticancer Natural Products

Samantha Tambrini

Natural products are small molecules produced by living things. There are many different methods to synthesize natural products of interest such as diketopiperazines (DKPs). DKPs are cyclic dipeptides which are constructed from two amino acids and show a wide variety of bioactivities making them suited to drug discovery and similar applications. Bacteria produce natural products via biosynthetic pathways which involve a series of enzyme catalyzed reactions that lead to a bioactive product in environmentally friendly ways. Nocardioazine B is a DKP that has been shown to possess anticancer properties. Understanding of the enzymes in this pathway can lead to cheaper industrial production methods of DKPs. However, it is currently unknown if biosynthesis of altered compounds such as nocardioazine B analogs with halogen atoms can be produced using these biosynthetic pathways. Here we show that Streptomyces lividans, engineered with the nocardioazine B pathway genes, can produce nocardioazine analogs when fed precursors with halogen atoms. Our results demonstrate how biosynthetic pathways DKPs show a remarkable capability for yielding analogs through chemoenzymatic synthesis. The results also show further insight into the promiscuity of these enzymes. It is hoped that these investigations will further the understanding of this biosynthetic pathway and help development of cheaper production methods for medicinal compounds, since halogenated compounds are highly bioactive and have seen extensive use in pharmaceuticals. Understanding of how these enzymes can be used to produce various DKP analogs can vastly improve the biological methods by which these compounds are made.

Dr. Amy Lane
Chemistry

An Analysis of Basigin Expression in Mouse Intestines in Response to Inflammation

Jeffrey Perera

Basigin is a transmembrane glycoprotein expressed on epithelial cells throughout the body and blood vessel endothelial cells. These types of cells often form barriers, like the blood brain barrier (BBB). A recent study by this laboratory suggests that Basigin gene expression on BBB endothelial cells is affected by an inflammatory stimulus. Epithelial cells of the intestines also form a barrier. It is possible that Basigin expression may be altered by inflammatory stimuli in this location as well. The purpose of the present study was to determine if the expression of Basigin in mouse intestines is influenced by an inflammatory stimulus. It was hypothesized that Basigin expression in mouse intestines would decrease in response to treatment with lipopolysaccharide (LPS), a component of the outer membrane of Gram-negative bacteria. To determine if there are differences in Basigin expression between male and female mice, Basigin expression was measured in each. Then, female mice were used to determine if Basigin expression changes in response to treatment with LPS. Animals were euthanized and the intestines were extracted. For the LPS treatment, intestinal samples were incubated in medium containing LPS (10 g/mL) or saline for 24 hours. Basigin was measured using a quantitative ELISA. It was determined that Basigin expression is greater in males than females. Additionally, no difference in Basigin was observed between the LPS and saline treated samples. The hypothesis was not supported. Future experiments will use animals at different ages, as well as male intestine samples.

Dr. Judith D. Ochrietor, Dr. Andrea Arikawa
Biology, Nutrition and Dietetics

Doping Dependent Coercive Field in the Reduced Dimensional System La_(1-x)Sr_(x)MnO_(3) (0≤x≤0.5)

Charles T. Bryant

We have investigated the magnetic orderings of a series of La_(1- x)Sr_(x) MnO_(3) (LSMO) thin films grown epitaxially strained to (001) oriented strontium titanate substrates as a function of strontium doping x between 0 and 0.5. We observed a magnetic transition around 100 K for x = 0.50 in the magnetization and coercive field data that could be related to the phase separation transition seen in bulk crystals. The strain induced ferromagnetic transition for x = 0.00 exhibits a prominent hysteresis loop at 20 K with a coercive field that is reduced by over a factor of two by 50 K. The coercive field as a function of temperature is reported for the 0.00, 0.04, 0.17, 0.20, 0.33, 0.40, and 0.50 strontium concentrations.

Dr. Thomas Pekarek
Physics

Effects of Ivermectin on Neuro-Transcriptional Profiles in Zebrafish

Alexander Bartkowiak

Ivermectin is a common anti-parasitic drug prescribed for use in humans. Although ivermectin's proposed site of action in the brain is the GABA receptor, not much else is known about its neuroactivity. Zebrafish provide an intact vertebrate model for testing the neuroactivity of systemically administered compounds. We used genetically engineered NeuroD-GFP zebrafish that have a widespread expression of Green Fluorescent Protein in their neurons to isolate neuronal and non-neuronal cell populations with and without exposure to ivermectin via flow cytometry. We then performed bulk-RNA sequencing to determine the expression profiles of each population. Downregulation in the GABAergic synapse pathway was found validating the methods used. Additionally, upregulation in the cytokine-cytokine receptor interactions pathway was found suggesting that Ivermectin elicits an innate immune response which requires further investigation. Future work will include an expanded analysis of the GABA pathway.

Dr. Marie Mooney
Biology

Reflective Writing in Introductory Physics

Austin Anderson, Paige Pressler,
Mark Swartz, Kathryn Humphreys

Learning is a process that involves mutual responsibility and practice adjustments. By mutual responsibility, we mean students' relying on their instructors and classmates for feedback as they proactively navigate new material. By practice adjustments, we mean changes in a student's approach to a course based on monitoring and evaluating their progress in the course. However, in introductory physics, many students struggle to adjust their practices in response to formative assessments. We studied these difficulties in an introductory physics course by assigning a weekly reflection journal with questions about the students' experience in the course, including the challenges they encountered and the study habits they practiced. These reflection assignments prompted the students to describe the roles fulfilled (or unfulfilled) by members of the course community, to identify practice adjustments (or lack thereof), and to self-assess their progress toward positive learning outcomes. We reviewed these students' final reflection assignment and recorded themes that emerged: These students talked about collaboration (interacting with a classmate in the learning process), course difficulty (degrees or progression of difficulty), responsibility (Who is responsible for the student's learning?), self-managed growth (the learner making adjustments or taking actions to maintain or assert agency over their learning), and a lack of change in academic success or practices. These insights into the student learning experience will be used to generate course improvements.

Dr. W. Brian Lane
Physics

Impact of Response-Shift Bias on Students' Sense of Relevance

Brendan McEnroe, Ivy Shaw

Response-shift bias (RSB) describes how an instructional intervention can induce a downshift in students' self-assessment of their pre-instructional capabilities and interests. This downshift produces a misalignment between the students' perception of their learning experience and changes in pre-to-post self-assessments. The Colorado Learning Attitudes about Science Survey (CLASS) is one such self-assessment that quantifies students' attitudes toward and beliefs about physics as a subject by asking them to rate their agreement with a series of statements. Using an expected post-test and a retrospective pre-test, the RSB downshift has been observed in pre-to-post instructional shifts in the CLASS, offering a possible explanation of why significant positive CLASS shifts can be difficult to obtain. However, it remains to be seen what this downshift reveals about student self-evaluation. To explore this question, we added a free-response reflective question to four items on the CLASS that prompted students to explain how they determined their expected and retrospective responses. We summarize the students' reflections on their CLASS responses to explore the question of how students' self-evaluation changes after one semester of physics instruction. We examine correlations between themes in students' responses, finding differences in how their reasoning plays out between pre- and post-instruction. These correlations reveal that the students made more connections with their conceptual knowledge at the end of the semester than at the beginning, highlighting the role of RSB in their survey outcomes. These trends offer insight into additional dimensions of the student learning experience and could help physics educators design more engaging courses.

Dr. W. Brian Lane
Physics

Premenopausal Platelet-Derived Exosome Product (pmPEP) as a Novel Treatment Option for Viral Myocarditis

Presley Giresi

Myocarditis is characterized as inflammation of cardiac muscle and can be sighted by bacterial, fungal, or viral agents. It is the third leading cause of sudden death and affects over 3.1 million people globally each year. Coxsackievirus group B3 (CVB3) is one of the main viral agents which can initiate myocarditis. Currently, there are no disease-specific treatment options for myocarditis, and it is often diagnosed after progression to dilated cardiomyopathy (DCM) when fibrotic tissue infiltrates the myocardium. The main aim of this project was to evaluate the efficacy of extracellular vesicles (EVs) in a mouse model of viral myocarditis and DCM. Because males are more susceptible to viral myocarditis (3.5 males: 1 female), EVs derived from the premenopausal female population were explored as they contain the highest

levels of estrogen. Estrogen treatments in male subjects have been demonstrated to reduce macrophage activity and the release of cytokines, both immune system components which are involved in developing inflammation within cardiac tissue. It was hypothesized that extracellular vesicles from healthy premenopausal females would reduce myocarditis and progression to DCM by regulating critical innate immune system activation pathways. Purified exosome product derived from healthy premenopausal females (pmPEP) or PBS (control) was administered to male BALB/c 8-week-old mice intraperitoneally (ip) on days-1, 0, and 1 post-injection with CVB3 given ip on day 0. pmPEP was shown to significantly decrease myocardial inflammation at the acute time point. A reduction in fibrosis was also observed at the chronic time point, however, it was not significant.

Dr. DeLisa Fairweather, Dr. Katelyn Bruno, Dr. Terri Ellis
Mayo Clinic, Mayo Clinic | UNF Department of Biology, UNF Department of Biology

An Analysis of Basigin Gene Expression in Mouse Intestines Using Fecal Samples

Timothy Harris, Jeffrey Perera

Basigin is a transmembrane glycoprotein expressed on epithelial cells throughout the body and blood vessel endothelial cells. These types of cells often form barriers, like the blood brain barrier (BBB). A recent study by this laboratory suggests that Basigin gene expression on BBB endothelial cells is affected by an inflammatory stimulus. Epithelial cells of the intestines also form a barrier. It is possible that Basigin expression may be altered by inflammatory stimuli in this location as well. Because the long-term goal of the project is to evaluate human samples, a non-invasive sampling method was employed. The purpose of the present study was to determine if mouse fecal samples contain protein and, if so, whether the fecal samples contain Basigin. It was hypothesized that Basigin could be measured from protein isolates of mouse feces. Two male and two female mice at four weeks and eight weeks of age were weighed. Two fecal pellets were obtained from each animal. Samples from like age/sex animals were combined, homogenized in phosphate buffer saline, and centrifuged to obtain a cleared protein lysate. The protein concentration was determined using the Bradford-Coomassie protocol. Basigin protein expression was determined via a quantitative ELISA. It was determined that the mouse fecal samples contain protein and that Basigin can be measured in the fecal samples. Male mice at both ages had a higher concentration of Basigin per body weight than the females. The data suggest that fecal samples are a useful method for measuring Basigin expression in the intestines.

Andrea Arikawa , Judith D. Ochrietor
Biology, Nutrition & Dietetics

Sand Tigers and Shipwrecks

Ashlynn Kemp

The goal of this project is to educate the public on and advocate for the importance of artificial reefs for sand tiger shark habitat on the Atlantic coast by creating a three-dimensional model of the USS Tarpon to display at North Carolina Aquarium at Roanoke Island. Manmade structures can become substrates for corals to settle on. Resulting reef systems attract other fish species. In turn, these structures become very productive habitats that provide accessible prey for sharks. The USS Tarpon is a United States Navy Submarine that sunk off the coast of Cape Hatteras, North Carolina in 1957 and has since transformed into an artificial reef. A three-dimensional rendering of the sunken submarine created by the National Oceanic and Atmospheric Administration (NOAA) has been employed as the starting point for the project. Production of this three-dimensional model of the USS Tarpon via 3D printing has been coordinated to provide a tactile image of artificial reef structure to those who may never have an opportunity to see the wreck in person. Progress has been made by Dr. Nicholas Eastham with the UNF Solve, Tinker, Explore & Play (STEP) Lab as well as Phil Daniels, a volunteer with North Carolina Aquariums, by testing new filaments, printing techniques, and file formats. Overall, it will be vital to continue exploring new methods to construct the best possible model for use at NC Aquariums to inform the public on artificial reef systems and their importance to sand tiger sharks.

Kelly Rhoden, James Taylor, Dr. Nicholas Eastham
Institute of Environmental Research and Education,
UNF STEP lab

The Role of Goosecoid in Tardigrade Gut Patterning

Tatiana Baia

The tardigrade body plan has evolved to be more miniaturized and simplified. We are interested in the connection between modifications to the tardigrade body plan and modifications to developmental mechanisms. In many animals, goosecoid plays a developmental role in patterning the foregut. It is unclear what role goosecoid plays in tardigrade development. We aimed to address this question by investigating where this gene is expressed as well as the function of this gene during tardigrade development. We identified a single ortholog of goosecoid in tardigrades by phylogenetic analysis. This gene encoded a highly conserved homeodomain. We present in-situ hybridization results for the tardigrade species Hypsibius exemplaris. The expression pattern of this gene during H. exemplaris development is consistent with a conserved role in foregut patterning. In the next phase of our research, we plan to use RNA interference in H. exemplaris to more directly test the function of goosecoid in this species.

Dr. Frank Smith
Biology

Characterization of the Expression of Basigin and Monocarboxylate Transporter-1 (MCT1) in Mouse Brains in Response to Acute and Chronic Inflammation

Falont Laveus

Inflammation occurs in two stages. Acute inflammation is activated immediately after a harmful stimulus is presented. Chronic inflammation is a consequence of an acute response and is prolonged. Typically, the central nervous system is protected by the blood-brain barrier (BBB), which consists of endothelial cells, astrocytes, and pericytes. Endothelial cells express a variety of proteins, including the cell adhesion molecule Basigin and the transporter protein Monocarboxylate transporter-1 (MCT1), which associate in the neural retina. The purpose of the present study was to evaluate the expression of Basigin and MCT1 in mouse brain stimulated with lipopolysaccharide (LPS) for various times to mirror acute and chronic inflammation. It was hypothesized that the expression of Basigin and MCT1 would increase in response to LPS. The brains of post-natal day (PD)-7, -30, and -180 mice were harvested and exposed to LPS (10 mg/mL) or saline control for 3, 6, 12, or 24 hours. The brain proteins were isolated and subjected to ELISA analyses. Brain samples were also subjected to immunohistochemistry. It was determined that Basigin expression significantly decreased in PD-7 brains and significantly increased in PD-180 brains exposed to LPS for 24 hours. Conversely, no significant changes in MCT1 expression were observed. The differential expression of Basigin in PD-7 and PD-180 but not PD-30 animals suggests that the BBB of neonatal and older adult mice are more susceptible to the effects of chronic inflammation than that of younger adult mice. The effects likely involve cell adhesive aspects of the BBB rather than metabolic aspects.

Dr. Judith D. Ochrietor
Biology

High-content (HC) Phenotype Imaging and Validations for Drug Discovery Against Intracellular Trypanosoma Cruzi

Andres Prieto Trujillo

Trypanosoma cruzi is the causative agent of Chagas disease, endemic to mainly Latin American countries. Current global annual T. cruzi infection rate stands at 7 million people with nearly 10,000 reported deaths per year. Infection of T. cruzi has two phases, an acute phase and a chronic phase that can last decades, often resulting in myocarditis, megacolon or megaesophagus due to the untreated replication of the T. cruzi amastigote. With only two clinically accepted drug treatments, nifurtimox and benznidazole, which have well reported toxic side effects, and the ongoing spread of the disease to non-endemic areas. There is an urgency to identify new treatments against the clinically relevant form of T. cruzi -the intracellular amastigote. Being a

NTD, chagas research lacks coordinated, multifaceted efforts for a drug discovery i.e. to ensure a high-throughput (HT), cost effective method to rapidly identify novel compounds as potential therapeutics from large libraries. Herein, we describe a robust in-silico and in-vitro integrated drug discovery workflow implementing a HC phenotypic imaging screening using STD compounds and repurposable, FDA approved drug compounds against the amastigote stages of T. cruzi strain CL expressing transgenic EYFP infected with VERO/A549 cells. Additionally, initial HT- virtual screening against a selected target, i.e. glycosomal Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) was performed followed by MD simulations to select hits from FDA approved library. Positive hits were tested in vitro using newly established HC method on amastigote form of T. cruzi CL. Using Image-Express PICO, we can determine the true efficacy of test compounds following this HC phenotype screening protocol. As part of the validation of HC method, we have identified an FDA approved Epigallocatechin gallate (ECG) as a lead natural compound specific to parasite GAPDH, with binding energy of -10.6 kcal/mol and an IC50 of 46.5μM against epimastigotes, and cytotoxicity levels below Amphotericin B. Additional experiments are underway to expand validations using T. cruzi brazil strain expressing luciferase reporter gene.

Dr. Judith Ochrietor
Biology

Studying Mechanosensitive Ion Channels in Pseudomonas aeruginosa Membranes

Isabella Sabrein Cioffi

As single celled organisms, bacteria have developed numerous ways to survive environmental changes. One of these survival mechanisms is the use of its ion channels to open or gate depending on the external stimulus. Mechanosensitive ion channels are highly diverse but fall into two main categories, large conductance (MscL) and small conductance (MscS). Mechanosensitive ion channels were first characterized in Escherichia coli (Ec) and homologues have been found in other gram-negative proteobacteria. One such proteobacteria, Pseudomonas aeruginosa (Pa), has yet to be characterized. Using bioinformatics, we predicted six MscS and one MscL homologous channels in the P. aeruginosa genome. To determine if these homologues are expressed in Pa, we will utilize qPCR to measure the relative channel expression levels. In order to observe mechanosensitive ion channels in the Pa membrane we will utilize patch clamp electrophysiology on spheroplasts. First, we need to develop a novel method to create giant spheroplasts of P. aeruginosa. In order to develop this method, we first had to study the morphological characteristics of P. aeruginosa under normal conditions and in the presence of cephalexin. Cephalexin prevents the normal cell division of bacteria which enlarges the single cell organism. This step is vital to giant spheroplast formation. Here, we report the most viable concentration of cephalexin to grow P. aeruginosa to an applicable size for use in creating giant spheroplasts.

Dr. Hannah R Malcolm
Chemistry

Investigating the Developmental Role of Twist in Tardigrades

Taneshia Wyman

Investigating the developmental role of twist in tardigrades The gene twist regulates myogenesis in a diversity of animals. The protein encoded by this gene is a basic helix-loop-helix (bHLH) transcription factor. We are interested in whether twist regulates myogenesis in Tardigrada. We identified a single candidate ortholog of twist in the tardigrade species Hypsibius exemplaris and Ramazzottius varieornatus by reciprocal BLAST search. This gene encodes a bHLH domain, like twist orthologs in other species. We confirmed that this gene was an ortholog of twist by phylogenetic analysis. In-situ was preformed to determine where twist is expressed in H. exemplaris embryos. We identified an expression domain of twist in the endomesodermal layer of the developing mid-trunk region. This region may represent where muscle cells originate in H. exemplaris. Next, RNAi experiments targeting twist will be performed to test this hypothesis.

Dr. Frank Smith
Biology

Native Jax Community Partner Project

Grace Sadoff

During Spring 2022, NativeJax a Community Partner to the Environmental Leadership Program wanted to host a Spring Harvest Festival within the Jacksonville community. This festival would take place in Springfield and incorporate many of the local companies, bands, history, and much more. During the spring semester, Logan Larcholle and I were tasked with acquiring sponsorships, creating marketing materials, gathering information, and conducting surveys in the surrounding areas. Throughout the semester we worked over seventy hours by having weekly meetings as a group via zoom and meeting as a pair in person to accomplish each goal. While I worked on the marketing side by creating the flyers, advertisements, and other media Logan took to the logistical side to create an outline of everything needed for this event so that we could check this list off as they were accomplished. Three weeks before the event was to take place some complications led to the entire event being canceled. While this was not the goal we had in mind as a team it was decided to focus on the mission of NativeJax. This led to the creation of new marketing materials being designed for the company and helped spread the word via social media and tabling. Overall, the pivot from a large-scale event to the increasing spread of the partner's mission taught both Logan and me how to not only plan an event but how to adapt to the challenges that may occur, especially ones that are not in our control.

Kelly A. Rhoden
Institute of Environmental Research and Education

Identifying Drug Targetable Pathways In Rare Disorders Using Omics Technology

Amy Batten

Individuals affected by NGLY1 Deficiency cannot properly deglycosylate and recycle certain proteins. Even though less than 100 people worldwide have been diagnosed with this rare autosomal recessive condition, thousands are affected by similar glycosylation disorders. Common phenotypic manifestations of NGLY1 include severe neural and intellectual delay, impaired muscle and liver function, and seizures that may become intractable. Very little is currently known about the various mechanisms with which NGLY1 deficiency affects the body and this has led to a lack of viable treatment options for those afflicted. This experiment uses a loss-of-function (LOF) mouse model of NGLY1 Deficiency homologous to a mutation observed in affected humans that prematurely terminates the protein. Mouse pups with two LOF alleles are embryonic lethal, and we observe gross morphological effects in the liver and brain of these pups starting as early as embryonic day 15.5 (E15.5). Given the potential for pharmaceutically improving cognitive function post-diagnosis in humans, we focused on understanding the neurological gene expression. Therefore, we harvested cortex and full brain tissue from littermates of a carrier-cross at E14.5 to acquire transcriptomes for gene expression analysis. NGLY1 gene counts displayed significant dose dependency across the normal, carrier, and affected littermates with correlated effects in genes dealing with glycosaminoglycan biosynthesis, as expected, and Wnt signaling pathways. Previous knowledge of glycosaminoglycan biosynthesis and recent breakthroughs in treatments utilizing the Wnt signaling pathway provides a foundation for future treatment investigations concerning NGLY1 deficiency and potentially other glycosylation disorders during development.

Dr. Marie Mooney
Biology

PRMT 1 Inhibitor P2 Reduces Cell Viability in Breast Cancer and Colon Cancer Cell Lines

Tala Sartawi

Post translational modification (PTM) is a crucial process that regulates gene expression and cell cycle pathways. Protein Arginine Methyl Transferases (PRMT) are a group of enzymes that contribute to PTM by methylating arginine residues of proteins. PRMTs are categorized based on their methylation pattern into three types. PRMT 1 is responsible for most of the asymmetrical methylation in the cell and its overexpression is seen in several cancer cell lines and is associated with worse prognosis, making it a promising target for therapy. Here we look at the anticancer effect of UnAcH416 (P2), a PRMT 1 specific peptoid inhibitor using in vitro analyses. P2 decreased cell viability and colony formation in a dose and time dependent in both MDA468 breast carcinoma and HCT116+/+p53 colon carcinoma cell lines, with no impact on normal liver HepaRG or human mammary epithelial cells (HMEC).

Morphological analyses suggest that P2 induces both apoptosis and autophagy in cancer cell lines. Apoptosis was further seen through increased activity of Caspase 3 while autophagy was supported by upregulation of LC3 levels. We predict that PRMT 1 inhibition leads to DNA damage and changes in gene expression inducing autophagy pathways as a survival mechanism. However, prolonged exposure shifts these cells into apoptosis. Further studies are needed to determine selectivity of P2 against PRMT1 and to elucidate its mechanism of action. Furthermore, studies combining P2 with current therapeutics might enhance its efficacy as an anticancer agent and are necessary for better utilization of this potential drug.

Dr. Fatima Rehman, Dr. Corey Causey, Dr. Bryan Knuckley
Biology Department, Chemistry Department

Nonlinear AFM for Galactic Supernova Neutrino Detection

Erika G. Bolano Duque

Amplitude-modulation atomic force microscopy (AM-AFM) is a method through which high-resolution surface topology measurements can be performed. These measurements are a possible read-out method for paleo-detectors, a novel tool in studying high-energy, low interaction cross-section particles through their nuclear collision recoil tracks in crystalline minerals over geological time scales (~1 Gyr). One such group of particles is core-collapse supernova neutrinos. When interacting with crystalline minerals, neutrinos leave nuclear recoil damage tracks in the crystal lattice (< 100 x 0.1 x 0.1 nm). One imaging solution would be defect-revealing chemical etching, but such preparation would compromise the reliability of measurements at these scales. Therefore, an AFM measurement technique that provides greater contrast without relying on etching was explored. Small, localized force gradients have been linked to the vicinity of the tracks. By characterizing a measurable nonlinear response to the changes in the probe-surface interaction caused by the tracks, it may be possible to obtain an equivalent topological contrast to that of etching. An AFM probe was modeled as a one-dimensional point mass as it interacted with a surface (Lennard-Jones potential). The nonlinear temporal response was studied through Fourier analysis to the ends of characterizing the dependence on the parameters, epsilon and sigma. The model revealed that for increases of 50% in each parameter, the amplitude at the second harmonic increases by a factor of 9–10 respectively, equivalent to 22.5%–25.0% of the fundamental peak. Therefore, second harmonic surface topology promises to be sensitive enough for recoil track detection.

Dr. Gregory A. Wurtz, Dr. Chris Kelso
Physics

Studies of Tardigrade Orthodenticle Reveal a Unique Role in the Eye Development of a Protostome

Mandy Game

The gene orthodenticle (otd) is responsible for regulating anterior development of most animals. One important function of otd is the regulation of eye development. Otd regulates eye activity differently in two main lineages of bilaterian animals. Bilateria is split into two main groups—Deuterostomia and Protostomia. The eyes of deuterostomes—a lineage that includes the vertebrates and some invertebrates—have ciliary photoreceptor cells. The eyes of protostomes—all of which are invertebrate animals—have rhabdomeric photoreceptor cells. In the deuterostome animals that have been investigated, otd regulates a c-opsin protein, which controls the activity of the ciliary photoreceptor. Otd also regulates the pigment cell that accompanies the ciliary photoreceptor in this lineage. In all protostome photoreceptor cells that have been investigated, otd regulates an r-opsin protein, which controls the activity of the rhabdomeric photoreceptor. However, otd has never been found to regulate the pigment cell that accompanies the photoreceptor in this lineage. We decided to investigate whether otd regulates the r-opsin activity of tardigrades, microscopic protostome animals with very simple eyes. I used RNA interference (RNAi) to knockdown otd to investigate its function, and new technology called Hybridization Chain Reaction to visualize the expression of otd and r-opsin in these animals. We found that when expression of otd is reduced through RNAi, we lose both expression of r-opsin and the pigment spot of the eyes of tardigrades. These results suggest that otd is functioning in tardigrades in a way that has not been seen before in the protostome lineage.

Frank W. Smith
Biology

Knowledger: A Semantic First Research Notebook

Tabitha Singh

A common problem in the field of scientific research is authenticating data integrity. Verifying the results of your research as well as when it was obtained can be difficult to do when laboratory documentation is inconsistent or insufficient. One solution is the usage of digital ledger technology and version tracking to provide an immutable record of data as it is created. This research investigates implementing a digital laboratory notebook that tracks and stores data on the blockchain via a python and JavaScript based website and the Bloxberg blockchain. This allows for the creation of data that is recoverable, verifiable, and well-documented. Such a system of data tracking could catapult data documentation forward in a time when many aspects of the scientific process have already transitioned to the digital realm.

Dr. Stuart Chalk
Chemistry

Investigating the Role of ECT2 in Pancreatic Ductal Adenocarcinoma

Ryan Argo

Pancreatic cancer is the fourth leading cause of cancer death in the U.S., and most patients are diagnosed after metastasis has occurred, meaning that finding genes and proteins that can be used as biomarkers or targeted by therapies is critical. One protein in particular, Human Epithelial Cell Transforming Factor 2 (ECT2) has been found to be overexpressed in numerous cancers, and in lung cancer has been found to be necessary for maintaining the cancer phenotype. To verify that this pattern was the same in PDAC, three cell lines (ASPC-1, Capan-1, and Panc-1) underwent lentiviral transduction to knock down ECT2. ECT2 knockdown at the mRNA and protein levels was verified using qPCR and western blotting respectively, and then phenotypic assays (soft agar to measure anchorage independent growth, invasion to measure the ability of cells to invade the basement membrane in vitro, and clonal expansion to measure the expansion, growth, and viability of these cells) were performed using the cells in order to determine the effects ECT2 knockdown had on the cancer phenotype. Results showed that ECT2 knockdown led to a significant reduction of transformed growth, invasion, and spheroid formation, size, and viability, indicating that ECT2 is necessary for these traits of the cancer phenotype in PDAC cells.

Dr. Verline Justilien
Biology

The Rattlesnake Conservancy

Emmary Barnett

The project was to write blog posts for The Rattlesnake Conservancy on the importance of rattlesnakes, how to coexist with them, and how to properly relocate them if necessary, as well as getting experience in the field by interacting with their Level One Venomous Certification Training. Rattlesnakes are an important species; they remove rodents and insects, aid in seed dispersal, and are a source of food for other animals such as birds of prey, and wading birds. Their venom can also be utilized in medicine and science. While working on this project I learned a lot about snakes. I learned about fang structure and function, sex determination in snakes, parthenogenesis, and sperm storage, what to do in the event of a snake bite, and how to contain a venomous snake. As an English major with an Environmental Studies minor, this project is perfect for me because through the blog posts I was able to improve my writing with an environmental topic which is a skill I will use often in the workforce. I also improved my communication skills by collaborating with my community partner. Another reason I loved this project is because I was able to interact with the snakes and even gain a Level One Certification. I also learned about the importance of conservation and the impact even one species can have on its environment.

James Taylor, Kelly Rhoden
Institute of Environmental Research and Education

Phytoplankton Monitoring at Kingsley Plantation

Gabrielle Nelson

Over the course of five weeks, members of the National Oceanic and Atmospheric Administration (NOAA), the National Park Service (NPS), and the University of North Florida (UNF) joined together to monitor phytoplankton at Kingsley Plantation. The goal was to see if there were elevated levels of phytoplankton, also known as a bloom. NOAA designated twelve target species to focus on. At elevated levels, these species could cause harm to human and wildlife health. Species such as Karena brevis produce brevetoxins that lead to shellfish poisoning in humans. A target species was considered elevated if it covered over 60% on more than one grid of the microscope slide. Sampling occurred once a week along the shoreline of the Fort George River, behind Kingsley Plantation. A plankton net was used to conduct a three-minute net tow. At the end of the net was a 125 mL bottle to hold the sample. Once the three minutes were up, the level of the water in the bottle was reduced to concentrate the sample. That 125 mL bottle was brought to the microscope where it was examined for target species. In the end, three target species were found: Pseudo-nitzschia spp., Ceratium furca, and Chaetoceros spp. Fortunately, they were not found at elevated levels. This is likely because phytoplankton blooms occur in the warmer months, and this project took place from February to March when the waters are relatively cold. Another reason is the Fort George River is quite active with few areas remaining still. This constant flow of water distributes nutrients and prevents any blooms. This joint project has concluded, but the NPS will resume Phytoplankton monitoring at Kingsley Plantation this summer.

James Taylor, Kelly Rhoden
Institute of Environmental Research and Education

Educating the Public on Invasive Species

Shannon McNeil

The Jacksonville Zoo and Garden houses several different species that are invasive to Florida's ecosystem. This project was designed to educate visitors, both in-person and online, on the different invasive species found there and the dangers they could have on Florida's ecosystem if released. Though the educational material was only created for some of the invasive species, it was designed with the capability to later be used for all species throughout the Wild Florida exhibit. The species that were included were the green anaconda, northern African python, Burmese python, Argentina black and white tegu, red tegu, freshwater stingray, Cuban tree frog, lionfish, and reticulating python. This project began by researching their life history and compiling a document that included native habitat and terrain, diet, reproductive capabilities, average age length, and more. I also included their current impacts on Florida's ecosystem and if there were any current conservation measures in place to decrease their population in Florida. Several logos were then designed to help visitors easily distinguish between native and invasive species, with two of those logos later being pitched to the design and marketing team. Lastly, the information that was compiled for each of the species was

used to create a Story Maps, with helpful links and interactive maps being used as well. The Story Map will serve as an educational resource for visitors, both in-person and online, as well as staff members.

Kelly Rhoden
Institute of Environmental Research and Education

Biology, Physics, & Chemistry
Graduate Research

Investigation into the Segment Polarity Genes in Tardigrada

Taylor Harrison

Segmentation is the metameric repeating of body units. It has been an impactful trait for the diversification of body plans in Panarthropoda. This diversification has included the compact body type as seen in Tardigrades, legs for many extant members, and other appendages. Segmentation in Arthropods is caused by Segment Polarity Genes (SPGs). It is unclear whether all of these genes modeled segments in the Panarthropod ancestor as many of these genes come on after segmentation in Onychophora. In addition to this there is currently no functional data outside of Arthropoda for these genes. Functional data is important to cement the role of these genes in segmentation. This study aims to look at expression patterns of engrailed, hedgehog, and cubitus interruptus genes and the functional data for engrailed gene to determine the mode of segmentation in Tardigrada. The study will give us insight into how an important piece of the puzzle trying to unravel the origins of segmentation in this clade. It will also give insight into how miniaturized body plans evolve due to Tardigrades small size.

Frank Smith
Biology

Searching for Superconductivity in Mott-Insulating Vanadates

Nathan Bairen

Using molecular beam epitaxy (MBE), we grew samples of strontium-doped lanthanum vanadate (L1-xSxVO3 or LSVO) with x = 0, 0.1, and 0.2 on (001) SrTiO3 substrates at ~700° C and partial oxygen pressures of 5E-8 torr. We found this low oxygen partial pressure to be key to stabilizing the perovskite structure of LaVO3. Using a four-point bipolar measurement, we studied the resistivity of our samples over a temperature range of ~5 K to room temperature. We find that the resistivity of our samples strongly depends on doping, x. For our x = 0.2 LSVO sample, we observe a metal-insulator transition at ~55 K; below this, the sample remains in an insulating ground state. For our x = 0.1 LSVO sample, we observe two transitions with an intermediate conducting state at ~62 K and ~32 K.

Dr. Maitri Warusawithana
Physics

Beyond GGA+U: SCAN meta-GGA on 2D Van der Waals magnet CrPS4

Alexandria Alcantara

We examine the electronic and magnetic structure of CrPS4 by employing the SCAN meta-GGA density functional. We find that the magnetic configurations considered, thus far, predict the experimentally observed A-type antiferromagnetic (A-AFM) ordered ground state, with a magnetic moment of 2.77?B per chromium atom. We compare these values with previous studies on CrPS4 used with GGA and GGA+U to highlight the accuracy of SCAN for predictions in future analysis. This work was supported by the U.S. DOE NNSA under Contract No. 89233218CNA000001 and by the Center for Integrated Nanotechnologies, a DOE BES user facility, the LANL LDRD Program

Dr. Jason Haraldsen
Physics

Identifying Novel Cyanobacterial Species from Lake Hurons Sinkhole Microbial Mats

Callahan McGovern

Submerged sinkholes with oxygen-poor, sulfur-rich groundwater in Lake Huron (U.S.A.) contain microbial mats dominated by both oxygenic and anoxygenic cyanobacteria. Cyanobacteria are a diverse assemblage of organisms present in nearly every known ecosystem. Recent investigations around the world have recovered vast amounts of novel biodiversity in seldom sampled extreme habitats. The last decade has seen an explosion of newly erected cyanobacterial taxa based on molecular (16S and 16S-23S ITS) data. However, assessing phylogenetic relationships in cyanobacteria is challenging due to phenotypic plasticity, cryptic diversity, and a lack of morphological variability. When employing ITS data—often used for species-level identification—we recommend using a blind structure clustering approach to reduce confirmation bias. This approach includes folding all available ITS structures and grouping them based on shape before comparing results with 16s phylogenetic trees. This technique allows researchers to overcome background variability to find true differences between the folding structures of the 16S-23S ITS domains. We have explored strains of novel Anagnostidinema from the sulfur-rich sinkholes of Lake Huron. Using the blind ITS clustering approach allowed for greater species and genus level resolution, leading to increased clarity of the phylogenetic relationships within Anagnostidinema. In addition, the secondary structures of the V3 ITS motif were identical yet unique for three of our strains. Based on this evidence and our strain's ecological distinctiveness, we propose the erection of a new species: Anagnostidinema visii.

Dr. Dale Casamatta
Biology

Histological Comparison of Shark Dermis Across Varying Ecomorphologies

Olivia Schuitema

The integument of fishes plays different crucial roles ranging from protection and structural support to hydrodynamic function. Among fishes, shark skin has been widely investigated with most studies focusing on the superficial epidermal layer, where dermal denticles are observed. Deeper to this layer lies the dermis, and although this is the dominant layer of the integument, little is known about its composition and morphology. Shark dermis consists of two layers, the stratum laxum and stratum compactum that house collagen and elastin fibers. Morphological differences in the composition of these layers and the number of fibers present may reflect shark's swimming functional demands. It could be expected that swimming patterns and ecologies may correlate with dermis thickness and fiber density across species, although the extent of such is unknown. The goal of this study is to characterize and quantify the dermis layer among four shark species with different ecologies and swimming profiles, including Ginglymostoma cirratum, Carcharhinus limbatus, Sphyrna mokarran and, Isurus oxyrinchus. Sixteen areas along the body were sampled and stained using histological techniques to identify collagen and elastin fibers, and to quantify dermal layer thickness. Preliminary results indicated that the dermis was thinner in the flank of all species examined. Additionally, thicker collagen bundles were found in the I. oxyrinchus in the caudal region, while S. mokarran had a higher density of elastin fibers in the pectoral fin region. The results of this research and their possible implications in swimming ecology and locomotion will be further discussed.

Dr. Maria Laura Habegger
Biology

Build-A-Water-Bear Workshop: The Developmental Underpinnings of the Miniaturized Tardigrade Body Plan

Raul Chavarria

Tardigrades are microscopic animals that have lost a large mid-trunk region of their body. The genes that encode the mid-trunk region in most animals are missing in tardigrades, and this loss was likely a consequence of their miniaturization process. Yet, the developmental programs that ultimately build a tiny tardigrade remain unknown. Therefore, uncovering these programs can help resolve the evolution of the miniaturized body plan of tardigrades. Most animals communicate positional information in a developing embryo through cell signaling pathways. The canonical Wnt (cWnt) signaling pathway and its inhibitors specify prospective head and butt regions, establishing the anteroposterior (AP) axis. Later, cWnt regulates posterior growth, a process that elongates the AP axis by adding a mid-trunk region. Tardigrades lack posterior growth, so we investigated the roles, if any, of cWnt signaling and inhibitors of cWnt signaling in regulating development in tardigrades.

Genomic analysis revealed that tardigrades have retained most components of the cWnt pathway. Gene expression analysis of Wnt genes detected gene expression in a posterior region of developing embryos. Additionally, when inhibitors of cWnt signaling were genetically disrupted using RNAi, a variety of AP axis defects were seen. These data support cWnt's role in establishing the AP axis of tardigrades. This suggests a scenario where the miniaturized body plan of tardigrades evolved through conservation of an ancestral developmental program, with loss of later acting programs like posterior growth. More broadly, understanding the roles of cWnt signaling across different animals illuminates how changes in developmental programs can lead to the evolution of new and unique features.

Dr. Frank Smith
Biology

Business, Communications, & Education

Undergraduate Research

Critical Curation to Reach and Teach All Students

Candace Stewart

Proposal submitted by Dr. Jamey Burns to NAPDS 2022 This presentation will share the PDS Master's Cohort model implemented to provide a learning community to teachers through the COVID pandemic. The University and School Administration teamed up to teach courses focused on improving teacher learning and school culture. Join our session to learn about the topics, structures and flexible format of this cohort model. Hear from teachers and school leadership on how this has transformed the PDS into a collaborative culture where teachers are reflective practitioners, engaged in peer coaching, and more intentional in analyzing their practice through an equity lens.

Dr. Jamey Burns, Dr. Deborah Reed
Education & Human Services Administration, Exceptional, Deaf, and Interpreter Education

Beaches Go Green

Noah Miller

The project done with Beaches Go Green was focused on educating public school-aged children on environmental issues, mainly the issue of single-use plastic. For the younger students, we taught them about the 4 Rs (refuse, reduce, reuse, and recycle) and tried to explain that recycling is a common, yet unreliable, way to reduce plastic use, as well as how to pack a greener lunch by avoiding single-serving bags and instead trying to use more reusable containers. For the older students, we talked about fast fashion and ways to avoid it, such as buying better quality items, as well as shopping at thrift stores or vintage stores instead of buying clothes brand new. With this group, we also participated in their eco-cinema series, which is a group of sessions where impactful environmental films are shown and discussed to bring more awareness to the public through a different medium. These events brought together not only more people from the community but also other groups focused on environmental issues. We were also joined in our projects by some of the high school club leaders from schools like Nease and Ponte Vedra High Schools. These students helped with presentations, as well as the ecocinema series, with one of them even speaking on the panel afterward.

Kelly Rhoden, James Taylor, Dr. Nicholas Eastham
Institute of Environmental Research and Education

Spring Community Harvest Festival

Logan Larochelle

This project with the Community Partner NativeJax was set to create a Spring Community Harvest Festival for the Springfield district of urban Jacksonville. It was meant to be a large event that would bring people from around the area to learn about the environment, have fun, and get to know one another. The primary focus of this project wasn't only to create a social event, but to also allow the citizens of Springfield to have an event meant for them. The planning phase of this project was dedicated to finding a location fit for the event, cleaning the area, maintaining a logistics network to get supplies to and from the site, finding vendors and food trucks, and creating marketing materials for the event. Every step except for cleaning the area and maintaining a logistics network was completed before there were difficulties with logistic networks that forced the event to be cancelled. After a long while of toiling to find possible solutions to the issues, it was determined that the event would be cancelled, and marketing materials would be designed for NativeJax's non-toxic yard application. There were plans to market the application at various farmer's markets and other events; however, there was little time left to do any further marketing with the newly created materials.

Kelly Rhoden
Institute of Environmental Research and Education

Educating the Public on Invasive Species

Shannon McNeil

The Jacksonville Zoo and Garden houses several different species that are invasive to Florida's ecosystem. This project was designed to educate visitors, both in-person and online, on the different invasive species found there and the dangers they could have on Florida's ecosystem if released. Though the educational material was only created for some of the invasive species, it was designed with the capability to later be used for all species throughout the Wild Florida exhibit. The species that were included were the green anaconda, northern African python, Burmese python, Argentina black and white tegu, red tegu, freshwater stingray, Cuban tree frog, lionfish, and reticulating python. This project began by researching their life history and compiling a document that included native habitat and terrain, diet, reproductive capabilities, average age length, and more. I also included their current impacts on Florida's ecosystem and if there were any current conservation measures in place to decrease their population in Florida. Several logos were then designed to help visitors easily distinguish between native and invasive species, with two of those logos later being pitched to the design and marketing team. Lastly, the information that was compiled for each of the species was used to create a Story Maps, with helpful links and interactive maps being used as well. The Story Map will serve as an educational resource for visitors, both in-person and online, as well as staff members.

Kelly Rhoden
Institute of Environmental Research and Education

Phasing Out Single-Use Plastics, Feasibility, and Student Opinion

Nathaniel Rodefer

In conjunction with a NOAA grant received by the University of North Florida and Eckerd College researching single-use plastic consumption by undergraduates, our Environmental Leadership Project focused on issues regarding policy changes that could address this consumption at UNF. In this effort, we conducted survey work of both members of the University Wide Committee on Sustainability and members of the student body. For the committee members, we gathered their insights from their own perspectives working in different department at UNF, gathering what they considered to benefits, challenges, and means of phasing out single-use plastics. For surveying the student body, we went before the University and Student Affairs Committee of Student Government to present our survey proposal. The committee approved our proposal and questions asking students about their thoughts towards single-use plastics and sustainable policy. Over the course of two weeks the survey was distributed by means of tabling, canvasing, social media advertising, and though email. The survey received 515 responses, 497 of which being students. In total, students expressed support for single-use plastics being opt-in (90.4%), support of discounts promoting sustainable behavior (97.2%), replacing bottled drinks with canned alternatives (88.3%), supportive of sustainable education (95.1%), and supportive of phasing out single use plastics at UNF (94.9%). From student statistics and knowledge of the committee members insight, we hope to advance desired sustainable policy on campus.

Kelly Rhode
Institute of Environmental Research and Education

Building identity, Self-efficacy, and Comfort: Bridging Connection to Teaching Through Field Experiences and Internships

BreeAnna Bumpers, Taylor Cronenberg

Teacher education programs are designed to prepare preservice teachers for their future classroom and instruction to mitigate the challenges that in-service teachers currently face when teaching students who are culturally and linguistically diverse, living in poverty, and/or attending racially segregated schools. The courses in teacher education programs serve to develop a beginning repertoire of curriculum types, instruction, and assessment strategies to set preservice teachers up for success and prevent teacher attrition. Preservice teachers are inducted into the profession through field experiences and internships wherein they can meaningfully enact a beginning repertoire and gain experience "designing responsive curriculum and instruction" (Lucas et al., 2018, p. 159). This presentation highlights reflective, meaningful internship experiences wherein preservice teachers discovered and worked on areas of growth to increase their self-efficacy. The benefits of using inquiry as a tool for self-reflection, self-efficacy, and

educational growth in teacher candidates will be discussed. The presenters include two teacher candidates at different stages in their teacher preparation program: a year-long Jacksonville Teacher Resident and a traditional intern completing her final fieldwork experience. The presenters will reflect on their initial wonderings based on Dana and Yendol-Hoppey's (2020) eight passions and share the data that they collected related to their wonderings and what they learned about themselves and inquiry in the process. More specifically, the presenters will discuss the following wonderings "How do I find my teacher voice?" and "How do I increase my comfort level in front of the classroom?" and how use of self-reflective practices and various strategies led to improved self-efficacy in the classroom environment.

Tia Kimball
Education and Human Services

Regeneration Park: Developing Green Infrastructure and Creating a Safe Space for Environmental Stewardship

April Thomas

The promotion of environmental advocacy is often limited to communities with more funding and resources for their community. This project, in collaboration with the Duval Soil and Water Conservation District, worked to bring environmental stewardship to an underrepresented community in Jacksonville with the installation of Regeneration Park along Moncrief and 13th Street. This project entailed the development of Regeneration Park through volunteer workdays and workshops to combine education and the development of the park with the help of the community, the choosing of native biodiverse plant material to place in the park, the spreading of public awareness of environmental quality including soil health at outreach events, and the production of a multi-media video to spread awareness about the development of the park and the mission of the DSWCD. The park will eventually encompass a native landscape with educational materials on the importance of environmental health and advocacy and include places for the community to gather and children to play. This project was successful in achieving public attention from the community, volunteer events exceeded expectations in popularity. Soil regeneration projects were also successful with the addition of natural landscape features including a bioswale with native plant life, and the addition of a cover crop to regenerate soil health with nitrogen fixation and absorption of heavy metal contaminants in the soil. Volunteers interviewed expressed enthusiasm for the development of the park and recognized the importance it will bring to the community and the effect it will have on future generations.

Kelly Rhoden
Institute of Environmental Research and Education

How Outcome-Based Education Fails to Address How Students Learn Math And, In Retrospect, Where It Actually Succeeds

Allen R Sorensen

Outcome-based education (OBE) is a system where high-stakes testing determines if students advance a grade level or graduate with a diploma. Mathematics OBE fails to comply with the three main principles of learning as described by the National Research Council. Classroom learning communities (CLCs), specifically those centered around inquiry-based learning (IBL) like p4c, offer an alternative to didactic methods of teaching as seen in OBE. There are examples of IBL in English Language Arts and Social Studies, such as Miller and Makaiau, but more research needs to be done on IBL in Math Education. Dr. Thomas Jackson, director of the UH Manoa Uehiro Academy for Philosophy and Ethics in Education, believes rekindling our child-like sense of wonder is essential for student engagement. The State of Hawai'i has become increasingly interested in developing creative, yet rigorous curriculums like p4c Hawai'i in response to the unique challenges of the area. Innovative classrooms such as Gerhana, et al's create a sense of community and gives students agency over their education. Community and this kind of freedom to explore concepts are cornerstones of IBL. The research proposed would create pedagogical resources for future educators and will pave the way for a Summer Math Camp.

Dr. Aaron Bradley Creller
Philosophy and Religious Studies

The S-Line Rail Link Biodiversity Corridor Field Guide

Alexia Maier

The S-Line Biodiversity Corridor Field Guide answers the question of how we can transform a space into an outdoor classroom. The goal of the guide is to provide a space for educators to hold field trips, as well as encourage the community to enjoy the outdoors, grow, and learn. This project is part of the revitalization of the S-Line Urban Greenway, formerly a brownfield because it was once a railroad, into the Emerald Trail. The "eco-amenities" present along the Biodiversity Corridor are learning opportunities—for instance, the Pollinator Garden is used to guide instruction on the pollination process, bee anatomy, and the various insects and animals that act as pollinators. Using the Kolari Vision camera, photographs were taken for the guide that show the differences between human and bee vision. While the field guide is not yet publicly available, it will be launched during Groundwork Jacksonville's annual Earth Day celebration on Sunday, April 23rd. The hope behind this project is that educators will use the S-Line as a field trip destination on a regular basis, use this free educational field guide that aligns with Florida's educational standards, and bridge the gap between recreational space and the classroom. The field guide provides opportunities for reading, learning science and history, as well as opportunities for community activism.

Kelly Rhoden
Institute of Environmental Research and Education

Enhancing the Educational Environment: Improving Student Outcome Using Visual Supports

Naomi Sein

Students in varying educational settings are supplied with varying levels of academic support. While it is well known that academic supports assist students in learning academic content, the visual supports are proven to improve and develop academic language and improve academic proficiency. Visual supports assist students in becoming more knowledgeable of academic content by cutting wasted instruction time. The overall focus of this presentation is to provide educational professionals with current research regarding the most effective visual academic supports within primary education (VPK-5th Grade). Each visual support presented focuses on the implementation effects within the primary education setting, along with the implementation's overall effect on students' increase in academic content. The discussion of each of these visual supports will be supported by the research conducted with students within the primary education population. Examples of visual supports to be shared include visual schedules, first/then charts, word walls, prompting cards w/ images, and instruction with visual technologies. Keywords: Visual Supports • Primary Education • Academic Content Proposal Description: Students in varying educational settings are supplied with varying levels of academic support. Academic support is the variety of "instructional methods, educational services, and school resources available to accelerate skills acquisition" (Great Schools Partnership, 2018) It is well determined in education that academic supports assist students in learning academic content. Students in varying academic settings receive academic support based on their academic needs and based on whether the student is an auditory learner, kinesthetic learner, and visual learner. These different types of learners require different academic supports to allow these students to have access to the academic environment. Through research and implementation of different visual supports, the specific academic supports that are proven to improve and develop academic language and academic proficiency are those that are visual supports. These visual supports assist students in becoming more knowledgeable of academic content by cutting wasted instruction time. Wasted instructional time was cut through the implementation of visual schedules which allow for smoother transitions as students gained an understanding of the tasks they are to be completing. In addition to an increase in available instruction time, students are able to increase academic language proficiency through the implementation of word walls and increase access to visual vocabulary. The overall focus of this research presentation is to provide educational professionals with current research regarding the most effective visual academic supports within primary education (VPK-5th Grade). Each visual support presented (e.g., visual schedules, first/then charts, word walls, prompting cards w/ images, and instruction with visual technologies) focuses on the implementation effects within the primary classroom. The discussion of each of these visual supports will be supported by the research conducted during our special education teacher education program. Reference Great Schools Partnership. (2018, September 21). District Policy Exemplar: Academic Support. Retrieved 2021,

from https://www.greatschoolspartnership.org/proficiency-based-learning/state-local-policies/exemplar-academic-support-policy/

Dr. David Hoppey
Exceptional, Deaf, and Interpreter Education

Real Life Cannot Be Simulated

Christine Casey, Winston Davis

COVID-19 lockdowns ignited massive interest with the March 2020 release of Nintendo's Animal Crossing: New Horizon (ACNH) video game. Restrictions on everyday life prohibited consumers from attending graduations, proms, parties, and family gatherings, amongst other events. Consequently, ACNH offered consumers a timely virtual, hands-on simulation experience, building an island community with friends. Players had the option to create fashion shows, buy clothing, listen to music, and catch wildlife. Consumers played ACNH extensively for hours amid COVID-19 lockdowns, adapting to a new social activity and hobby in 2020. However, this exploratory study focuses on the after effects of gameplay and changed consumption habits post-pandemic. In an exploratory study, 15 in-depth interviews were conducted via Zoom with ACNH players on two continents to explore the influence COVID-19 restrictions had on simulation gameplay and their consumption habits post-lockdown. The results revealed three major themes: lockdowns increased the demand for simulation games, a significant decline in consumption after the pandemic, and lockdowns sparked new gaming interests. After COVID-19 restrictions were lifted, the interviewees reported they had less disposable time and returned to their previous obligations, causing them to stray away from gaming. Findings suggest simulation video games are not a sufficient replacement for real-world connections. Hence, simulation game marketing should be focused on new, unique experiences that enable players to do activities they physically cannot do in real life and also the continued ability to play with others.

Dr. Natalie A. Mitchell
Marketing & Logistics

Engineering, Math, & Computer Science

Undergraduate Research

Metric Dimension of Graphs

Brendan Chamberlain

Discovered and studied independently by Peter Slater, Frank Harary, and Robert Melter in 1975, the metric dimension of a graph has found applications in a wide array of areas, including computer science, engineering, and chemistry. This project includes a discussion about the open problem of characterizing graphs by their metric dimension, applications of metric dimension to US Coast Guard LORAN stations, chemistry, and security systems, a discussion of the complexity of computing the metric dimension of a graph, and minimum locating sets for some well-known graphs.

Dr. Daniela Genova
Mathematics and Statistics

Influence of Shot Peening on Corrosion-Fatigue Behavior in the Ti-6Al-4V Alloy

Andy Kapperman

Ti-6Al-4V is a titanium alloy commonly used in medical implants such as replacement hip joints and teeth implants. Due to the variability of loadings that implants must be capable of withstanding, mechanical fatigue behavior (i.e., the mechanical behavior under cyclic loading) is a major concern for the durability of an implant. Implants must be capable of withstanding the cyclic and highly variable loads created by the human body for long durations of time. Additionally, the implant material must be capable of resisting corrosion due to a highly corrosive environment in the human body. Shot peening is a surface treatment commonly used to improve fatigue strength. By bombarding a material's surface with small objects known as shot, residual compressive stresses are introduced into the material's microstructure. The residual compressive stresses increase the loading necessary to create tensile stresses in the material. The associated benefit is that the material is then able to withstand higher loads before being subjected to fatigue driven crack growth. However, a notable negative consequence of the shot peening surface treatment is an increase in the material's surface roughness which can lead to undesirable corrosion behavior. To build upon past findings, a study is being designed to understand how shot peening and the subsequent use of polishing techniques may impact the corrosion fatigue performance of Ti-6Al-4V. Experiments will be conducted by applying fully reversed cyclic loadings to Ti-6Al-4V specimens submerged in a corrosive solution.

Dr. Jutima Simsiriwong, Dr. Alexandra Schönning
Mechanical Engineering

Light Weight Ceramic Engines

Ahmed Syed

Internal combustion (IC) engines have many applications for power generation. Most IC engines are made of metal and need a cooling medium to keep the piston cylinders operating at serviceable temperatures. Metals are some of the densest materials and add significant mass to the engine. Another downside is that energy is lost from the combustion process to the cylinder walls. To help alleviate these problems, the cylinder was made of a ceramic material for weight reduction and minimizing the energy lost to the cylinder walls. However, to get a better piston cylinder interface a thin metal sleeve was used on the interior of the ceramic cylinder resulting in a composite cylinder of ceramic and metal. To analyze the system for its thermal properties a one-dimensional polar thermal circuit was used. For stresses on the system, a hoop stress model was used to calculate the stresses at each layer of the system. A FEM analysis was done to verify the hoop stress model. The resulting hoop stress was lower than the tensile strength of the ceramic so the composite cylinder will operate within the engine operating parameters. The thermal model with the composite resulted in a 92% reduction of energy lost to the cylinder walls compared to a pure metal cylinder of the same thickness. This additional energy in the cylinder can either go directly to piston work, or the exhaust where it can be harnessed using a waste heat recovery system.

John Nuszkowski
Mechanical Engineering

Fabrication of IoT Sensors: A Wearable UV Radiation Detection Device

Celine Ramirez

In this work, a low-cost screen-printing technique was used to fabricate a UV sensor on a flexible substrate, with a silver (Ag) as the electrode material and the zinc oxide (ZnO) semiconductor as the UV sensing material. The screen-printing technique is an inexpensive and scalable method used for fabricating flexible sensors that are ideal for wearable devices. The fabricated sensor showed good mechanical bending stability. The 365 nm UV light source was used to test the UV sensing performance. The on/off cyclic UV illumination data collected showed the fabricated sensor's ability to respond to UV radiation. The sensor was connected to the Arduino pro mini to allow for wearability. The UV intensity response was displayed based on the color of the RGB LED connected to the Arduino. These results showed an inexpensive UV wearable sensor's potential to be developed into a device that helps users limit their long-term exposure to UV radiation and its health effects.

Dr. Pawan Pathak, Dr. Hyoung Jin Cho, Dr. Ladislau Bölöni
UCF Mechanical and Aerospace Engineering,
UCF Computer Science

Using Machine Learning to Predict Reading Strategies from fNIRS Data

Matthew Campbell

Functional Near-Infrared Spectroscopy (fNIRS) is an emerging Neuroimaging technology that is useful to researchers due to its low cost and flexibility. In this study, we develop machine learning models for predicting the strategies used by read- ers. Specifically, we develop supervised learning models based on Support Vector Ma- chines and Artificial Neural Networks for predicting 18 different reading strategies us- ing fNIRS data gathered from 75 participants who are asked to read a text passage. Our experimental results based on F1 values indicate that this approach is overall promising and that fNIRS data could potentially be used to predicting some of the strategies used when reading. For example, the "using text headings" strategy displayed a relatively high performance of 69%. This is the first study that develops machine learning models for fNIRS data from a reading exercise. Therefore, our findings have implications for both the machine learning application researchers and educators.

Dr. Indika Kahanda
School of Computing

Conveying Historical Narratives using ArcGIS Storymaps: The Story of Jacksonville's Spanish American Battery.

Erin Ogrodnik, Eleanor Ascheman

Historical interpretation plays an integral role in site conservation as it provides narratives to spaces and features that may not be well understood on their own. The recent widespread use of Geographic Information Systems has allowed for the creation of new methodologies in interpretation, including the integration of spatial data. This project sought to convey the narrative of the Spanish American Battery located on the St. Johns Bluff in Jacksonville; we used ArcGIS Storymaps to create an integrative narrative detailing the development of the site and its surrounding features in a timeline format by combining text and historical maps compiled in the Cultural Land Report provided by the National Park Service. The historical maps served as the foundation of the project, which we supported with text-based evidence and current-day imagery. Because the Spanish American Battery is not currently open to the public, this project provides an opportunity to share the history of the site and provide spatial context without ever setting foot on the property. This has implications for other projects that may be hard to access but would benefit from public support.

James W. Taylor, Kelly Rhoden
Institute of Environmental Research and Education

Neurological and Physiological Response to Mental Stress

Charles Newell

Electroencephalography has been a tool to better understand the functionality and activity of the brain. Recent studies have come to utilize the electroencephalograph (EEG) to determine if stress can be better detected. This study aims to better understand the relationship of neurological and physiological responses to mental stress, and if it can be relatively quantified. Utilizing the ratio of alpha oscillations (8-12 Hz) to beta oscillations (12-30Hz), over the duration of the tests performed, the increase in concentration and relative stress can be observed. While the study is still ongoing, the current results analyze the data collected from Stroop test specifically. Throughout the test, the response time is further constricted at two points, where these points are acting as an additional stressing stimulus. The results show that after the baseline, heart rate increases and remains at a heightened state throughout the testing period. Analysis of the electro dermal activity (EDA) has been limited due to quality issues, however, from the data collected, skin conductance was also observed to have an average increase with each induced stimulus. Finally, the average α:β ratio was found to decrease from the baseline, signifying higher levels of concentration. Fluctuations in the α:β ratio were observed with the greatest time constriction, where this phenomenon requires further investigation.

Dr. Mona Nasseri
Electrical Engineering

Predicting Reading Strategies from fNIRS Data Using Regression Models

Gini Duong

Unlike technologies such as fMRI that require subjects to lie in a chamber-like scanner, functional near-infrared spectroscopy (fNIRS) is in vivo brain imaging technology that is not as sensitive to motion and can be used to study the brain in more realistic environments. In this study, we used regression models to predict reading strategies from fNIRS data. We used measurements obtained from participants wearing fNIRS equipment while reading a passage to train ZeroR, Linear Regression (LReg), and Support Vector Machines (SVM) regression models. We used Root Mean Squared Error (RMSE) to evaluate model performance; models with lower RMSE indicate better performance. Initially the LReg and SVM models were unable to perform better than the ZeroR models which were used as a baseline. After further investigation we discovered that the fNIRS readings and reading strategies were not linearly correlated. We then changed the kernel for the SVM models from polynomial to the radial basis function (RBF) and discarded the LReg models. Although the performance of the SVM models improved with a non-linear kernel, they still were not able to beat ZeroR's performance. Currently, we are working on incorporating the temporal aspects of the data. For future work, methodically removing a feature from a model to study how

it affects performance, or in other words an ablation study, would provide useful insight on which features would be truly necessary for this problem. Testing other non-linear kernels to optimize the SVM models' performances would also be worthwhile.

Dr. Indika Kahanda
School of Computing

Exploring the Feasibility of Automating Biocuration for Neuropharmacology and Zebrafish (Danio rerio)

Victoria Leventman

The growing number of published biomedical articles stored in literature databases is far outpacing the rate at which bio-researchers can manually examine and annotate the literature to best meet their research needs. The curation of articles relevant to various biological subjects accommodates extending further research and fostering new developments and hypotheses as biologists enhance their domain knowledge. In this study, we investigated the feasibility of biocuration for the neuropharmacology field, with a focus on the model organism zebrafish (Danio rerio), and its potential to be utilized for automated annotations. The study first verified that literature related to genes in the GABA pathway, the drug Ivermectin, and zebrafish were readily available in biomedical literature databases such as PubMed and PubMed Central. This verification was achieved by programmatically developing an Information Retrieval pipeline and employing three E-Utilities provided by the National Center for Biotechnology Information: ESearch, ESummary, and ELink. Once a filtered subset of top-10 biomedical abstracts from the query results for "GABA AND Ivermectin NOT covid-19" were manually annotated, it was found that four abstracts had higher observed relevancy due to the presence of particular biological keywords and phrases. These findings are significant as they establish how bio-ontologies specific to zebrafish can be used with a dictionary mapping tool such as ConceptMapper to automatically generate valuable annotations. With information retrieval and annotated literature, it can evolve to become a knowledge base on neuroactive drug discovery with zebrafish that is made available to bio-researchers.

Dr. Indika Kahanda
School of Computing

Next Generation Wave Energy Converter: Harnessing the Energy of the Ocean

Brianna Rodriguez, Bryce Pressimone, Andy Kapperman

The blue economy is centered on the sustainable use of the ocean. Major sectors of the blue economy include fishing, aquaculture, maritime transport, and, perhaps most notably, marine energy. As a coastal state, Florida is in a prime position to harness clean renewable energy from the ocean. The National Renewable Energy Laboratory estimates that the marine resources of Florida and South Carolina may be enough to satisfy the power needs

of 7-million homes. Wave Energy Converters (WECs) are one mechanism that can convert the mechanical forces of waves into electrical energy. While WEC designs are still highly developmental, numerous universities and commercial companies are pursuing optimized WEC designs for the modern blue economy. WECs may be used in applications spanning from disaster relief in remote communities to supplementing the energy needs of major shipping ports. An interdisciplinary team of undergraduate students from the University of North Florida (UNF) has been developing a point absorber WEC. An initial small-scale prototype successfully illuminated an LED light using only wave motion. After initial success, development shifted to the manufacturing and testing of an intermediate-scale design fit to be tested in a wave basin. The intermediate design integrates four of the small-scale designs into a single, larger unit. After successful intermediate-scale testing, development will transition to full-scale modeling with the intention to prove market feasibility. UNF's goal is to provide a solution to the global energy crisis through WECs that will help to meet the demands of society using an environmentally sustainable approach.

Dr. Cigdem Akan, Dr. Nilufer Ozdemir
Civil Engineering, Economics

Engineering, Math, & Computer Science

Graduate Research

Dynamics of Mutualism in a Two Prey, One Predator System with Variable Carrying Capacity

Randy Lee

We considered the livelihood of two prey species in the presence of a predator species. To understand this phenomenon, we developed and analyzed two mathematical models considering indirect and direct mutualism of two prey species and the influence of one predator species. Both types of mutualism are represented by an increase in the preys' carrying capacities based on direct and indirect interactions between the prey. Because of mutualism, as the death rate parameter of the predator species goes through some critical value, the model shows transcritical bifurcation. Additionally, in the direct mutualism model, as the death rate parameter decreases to some critical value, the model shows limit cycle phenomena.

Dr. Mahbubur Rahman
Mathematics and Statistics

The negative impacts of smartphone usage among younger individuals.

Angel Perez Vila

Smartphone usage has risen exponentially over the last decade. Many tasks that were done in person or on a computer in the past can now be performed through our mobile devices. This has brought convenience to users, optimized business processes, and made information easily accessible for anyone in the world. However, this phenomenon is also changing our behavior and the way in which we interact with others, which could result in a number of negative effects. This survey paper explores the dangers of smartphone overuse and its consequences. These effects can be classified into five main groups based on which component of the human experience they affect: behavioral, cognitive, emotional, social, and physiological. The goal of this survey is to raise awareness about these issues and provide information that can help guide the use of smartphones among the younger population. Specific areas that may benefit from further research are also identified. This paper targets the Computers in Human Behavior journal and hopes to contribute to the ongoing exploration of the effects that technology has on humans.

Dr. Karthikeyan Umapathy
School of Computing, College of Computing, Engineering, and Construction

Surface Modification of Additively Manufactured Materials via Stress Gradients on Thin Film Growth

Andrew Miceli

Thin surface coatings, ranging from nanometers to microns thick, are commonly used to modify the performance of parts made from injection molding, machining, and 3D printing. These surface coatings, often composed of metal or metal oxide/nitride, are commonly added through physical vapor deposition (PVD). As these coatings are grown in kinetically limited conditions, large residual stresses may form during growth. In this work, we hypothesize that these intrinsic residual stresses may be used advantageously to preferentially modify the stress state experienced by the coated part via preloading effect. First, Finite Element Modeling (FEM) is used in this study to analyze the hypothesis. Using FEM, dog-bone specimens are tested in uniaxial tension using simulated coating surface pre-load stress in both tension and compression. Local stress magnitudes are determined on average by the von-Mises stress throughout the model after simulation is completed. This model is then analyzed to determine average stress of the material and which preload stress state reduces average stress through the material. It was found that in the typical tensile test load case, tensile preloading decreases overall stress of the specimen in the gauge section by X%, thus lessoning chance of failure due to this lower average stress. This FEM study will be complemented by validation experiments where 3D printing will be used to rapidly fabricate polymeric (ABS) parts which will be subsequently coated using PVD and tested in tension. Following uni-axial testing, fully reserved loading will be investigated to study the effects of compressive stress in PVD coatings on fatigue and results will be translated to high-value metal 3D printed parts.

Dr. Stephen Stagon, Dr. Jutima Simsiriwong, Dr. Grant Bevill
College of Computing and Engineering

Energy Considerations in Blockchain-Enabled Applications

Cesar Castellon

Blockchain-powered smart systems deployed in different industrial applications promise operational efficiencies and improved yields, while mitigating significant cybersecurity risks pertaining to the main application. Associated tradeoffs between availability and security arise at implementation, however, triggered by the additional resources (e.g., memory, computation) required by each blockchain-enabled host. This thesis applies an energy-reducing algorithmic engineering technique for Merkle Tree root and Proof of Work calculations, two principal elements of blockchain computations, as a means to preserve the promised security benefits but with less compromise to system availability. Using pyRAPL, a python library to measure computational energy, we experiment with both the standard and energy-reduced implementations of the Merkle Tree for different input sizes (in bytes) and of the Proof of Work for different difficulty levels. Our results show up to

98% reduction in energy consumption is possible within the blockchain's Merkle Tree construction module, such reductions typically increasing with larger input sizes. For Proof-of-Work calculations, our results show an average energy reduction of 20% across typical difficulty levels. The proposed energy-reducing technique is potentially applicable to other key elements of blockchain computations, potentially affording even "greener" blockchain-powered systems than implied by only the Merkle Tree and Proof of Work results obtained thus far.

Dr. Patrick Kreidl, Dr. Swapnoneel Roy
Electrical Engineering, School of Computing

Heat Treatment Effects on Fatigue Behavior of Additively Manufactured 17-4PH Stainless Steel

Jade Welsh

In this study, the fatigue resistance of additively-manufactured (AM) 17-4 precipitation hardened (PH) stainless steel (SS) subjected to various post-process heat treatment was investigated. 17-4PH SS specimens were fabricated using laser-beam powder bed fusion (LB-PBF), which is considered to be one of the most widely used AM processes for AM metallic materials. The LB-PBF 17-4PH SS specimens were separated into two groups, which were subjected to CA-H900 and non-heat treated (NHT) heat treatments. Wrought 17-4PH SS specimens manufactured using a cold-rolling process, and subjected to an H900 heat treatment were used as a reference to compare to LB-PBF 17-4PH SS specimens. The CA-H900 heat treatment was achieved by applying a temperature of 1050 °C for 0.5 hours followed by air cooling, while the H900 heat treatment was done by applying a temperature of 482 °C for 1 hour of air cooling. All specimens were tested utilizing an ultrasonic fatigue test system with a fully reversed sinusoidal signal to simulate conventional tension-compression fatigue testing. The morphology of the microstructure of LB-PBF 17-4PH SS specimens with different heat treatments was obtained through electron backscatter diffraction (EBSD). Fractography analysis of all 17-4PH SS specimens was conducted using a scanning electron microscope (SEM) to examine the crack initiation and growth mechanisms. LB-PBF 17-4PH SS specimens contain process-induced gas-entrapped pores, which were observed to be the main cause of crack initiation and failure. Overall, the fatigue resistance of LB-PBF 17-4PH SS was improved by applying CA-H900 heat treatment.

Dr. Jutima Simsiriwong
Mechanical Engineering

Analysis of Pervious Oyster Shell Habitat Using Computational Fluid Dynamics

Lauren Cope

Pervious oyster shell habitat (POSH) units are a new method for oyster reef restoration and shoreline protection. POSH units have a similar function to traditional Reef Balls but are made from recycled oyster shells and cement. As a result, they have a reduced carbon footprint when compared to Reef Balls. So far, POSH units have been deployed at multiple sites in Northeast Florida, including at Kingsley Plantation at the Timucuan Ecological and Historic Preserve. The role of the POSH units at Kingsley Plantation is to promote oyster growth/recruitment and attenuate wave energy from boat wakes. Wave energy attenuation may help mitigate shoreline erosion. The purpose of this study is to utilize computational fluid dynamics (CFD), specifically Siemens' STAR-CCM+, to examine the effectiveness of the POSH units at reducing shoreline bed stress at Kingsley Plantation. The beach profile at Kingsley Plantation was surveyed and these data were imported into STAR-CCM+. In addition, a 3D scanner was used to scan a POSH unit, and the scanned unit was added to the modeled shoreline. Currently, model refinements and a mesh convergence study are in progress. The next steps include experimenting with different POSH unit layouts, sizes, and placements (concerning different tidal levels) to determine the optimal setting for reducing bed stress for future POSH unit deployments.

Dr. Raphael Crowley, Dr. Kelly Smith
School of Engineering, Department of Biology

Arts & Humanities

Undergraduate Research

Semantic Markup and Contextual Research Related to a Digital Edition of a Seventeenth-Century Spanish Bibliography of the Indies

Stacey Harmer

This project involved editorial work and contextual research related to Dr. Clayton McCarl's digital edition of Antonio de León Pinelo's Epítome de la biblioteca oriental y occidental, náutica y geográfica (Summary of the Library of the East and West Indies and the Nautical and Geographical Arts, 1629). I used TEI-XML, the international standard for text encoding in the humanities, to mark up several aspects of the text related to the names of individuals, the publication status of the written works León Pinelo enumerates, as well as a range of the bibliographer's sentiments, such as doubt, praise, criticism, and corrections, regarding certain texts, authors, and their work. I also conducted contextual research related to a subset of the people and books mentioned in León Pinelo's text. The results of this research were then encoded into the draft edition so that Dr. McCarl can conduct deeper research on these items while on site in Madrid in May 2022.

Dr. Clayton McCarl, Dr. Sarah Mattice
Languages, Literatures and Cultures, Digital Humanities, International Studies

The Spectrum of Bisexual Identity

Storm Rowland

The erasure of bisexuals from the public narrative is the neglect of our society when it comes to representing LGBTQ+ individuals in media. My project "The Spectrum of Bisexual Identity" aims to put a positive spotlight on this marginalized group. Society needs to stop stigmatizing those who are bisexuals as confused or haven't chosen aside when it comes to their orientation. Rather it needs to realize that it is perfectly normal to fall into the spectrum of bisexuality no matter where one falls on it. My research project takes artistic ques from past masterworks and reinterprets their imagery into a queer accepting manner by placing the image of bisexuality as a divine gift that should be respected and treated as such. This work is constructed on a trifold wood panel series. Normally an altarpiece is meant for divine figures and as a piece to reflect upon scripture. My altarpiece aims to rewrite the narrative and give the bisexual identity a positive representation in both fine arts and society. It is time the bisexual image was brought into the narrative not as an afterthought but as the beautiful gift, some people are born with.

Amy Beecham
Department of Art and Design, College of Arts and Sciences

down for Dr. Bevel's class will be added to an existing digital humanities site about Red Hill. This poster is specifically focused on aspects of resistance in the city of Waycross during the late 19th and early 20th centuries. During this time, the efforts of black churches were important to the efforts of organizing the black community of the city together in order to oppose racism and support legislature such as anti-lynching laws. In addition to churches, national organizations such as the NAACP and UNIA were also present in the city, contributing to the organization of resistance in Waycross.

Dr. Felcia Bevel
History

Interpreting Red Hill Cemetery: Memorialization and Marginalization of Black World War I Veterans

Amarilys Sanchez

Red Hill Cemetery is an African American cemetery located about two hours north of Jacksonville in the town of Waycross, GA. The site is a space that represents the intersection of the themes of violence, resistance, and memory in the Black history of Ware County, GA. Red Hill embodies marginalization from the local government, as it was left desecrated and forgotten by the white residents and local authorities of Waycross. Red Hill also dually represents resistance to this project of forgetting, as the Black residents of Ware County kept the memory of their deceased family members and friends through oral histories and memorialization in the placement of headstones. In recent years, the renewed efforts of the Black Cultural Committee from the Okefenokee Heritage Center to memorialize Red Hill Cemetery has resulted in the involvement of the University of North Florida in historicizing the cemetery. In Spring 2022, students from the AMH4991/AMH 5992: Blackness and Archives course were tasked with writing the first historical narratives of Red Hill Cemetery to be featured in Red Hill Cemetery Project website. As a graduate student, I was tasked with leading a group of students in writing a public humanities narrative on the concept of memory, which we have chosen to adapt into memorialization. Our group decided to focus on Black World War I veterans buried at Red Hill Cemetery since many of the headstones still preserved on-site are the government-issued ones that families of veterans could request after their deaths in recognition of their military service.

Dr. Felicia Bevel
History

Thailand: The Return of Authoritarianism

Alexandra Harrison

In the post–World War II global order, democracy has made advancements around the world. However, it is not uncommon for governments to establish systems that try to emulate democracy while embodying a more authoritarian rule, which quickly becomes problematic because authoritarian governments are notorious for violating their citizens' rights. This can be seen specifically in Thailand, where multiple military coups d'état have caused changes in the government, forcing the nation to alternate between democratic and authoritarian policies. The most recent coup, staged in 2014, shifted the government away from democracy entirely, transitioning into the strictest authoritarian rule Thailand has seen since 1976. With this understanding, I analyzed the effects of the shift to authoritarianism in 2014 on the Thai citizens and their rights. This project addresses this question by researching the junta that emerged from the 2014 coup, called the National Council for Peace and Order (NCPO). The NCPO believed the only way to hold onto power was through intimidation, suppression, and violation of the people's rights. Through torture, free speech infringements, and even murder, the National Council for Peace and Order and their leader, Prayuth Chan-ocha, have proved that they are unable to lead Thailand in a manner that protects their people and advocates for their wellbeing.

Dr. Clayton McCarl, Dr. Sarah Mattice
Languages, Literatures and Cultures, Digital Humanities, International Studies

Bloodborne and Systemic Violence

Nerium Pitre

"Bloodborne" comments on systemic violence, specifically from the perspective of one in a position of privilege. The major symbol it leans on is blood as violence: blood begets blood, violence begets violence. The game is an allegory for how systemic cycles of violence will make monsters out of their victims, forced to harmful coping mechanisms. It examines how violence affects society as a whole, as well as on an individual basis. It also speaks on how cycles of violence are perpetuated by people in power, used to sustain that position of power and exploit those without. "Bloodborne" also asks how its audience will react to violence. It offers three options; to walk away as an individual and try to heal, to perpetuate the system, or to fight the system on a wider level. As one old hunter says to the player, "There's nothing more horrific than a hunt. In case you've failed to realize…The things you hunt, they're not beasts. They're people." People, dehumanized to justify the systems of abuse they suffer, lashing out because of it, especially against those who benefit from it and perpetuate it. And, so the Yharnamite "beasts" more aptly call the player, a beast hunter themself, "Vile beast!"

Dr. Jeffrey Smith
English

Making a Bilingual Digital Edition of Ophir de España by Fernando de Montesinos

Melinda Peacock

In 1644, Spanish author Fernando de Montesinos wrote a series of three books titled Ophir de España: memorias historiales y políticas del Pirú, in which he argues that the unknown location Ophir from the Old Testament is the Spanish colony of Peru. Book II has been studied by scholars since 1840 because it contains the most extensive genealogy of Incan rulers. By contrast, book I has never been published, despite its historical value as a first-hand account of the natural history of Latin America and a justification of Spain's colonization of the New World. In my poster, I explain the processes that I undertook to contribute to a bilingual digital edition of book I of Ophir de España that makes the manuscript accessible to English- and Spanish-speaking scholars worldwide. Working alongside Dr. Clayton McCarl from the University of North Florida, Dr. Nathan Gordon from Adrian College, and students Paulino Estévez-Ancira and Stacey Harmer from the University of North Florida, I modernized, translated, and added bibliographic annotations to 21 chapters of book I. I explain how I completed each of three steps, what challenges I faced, and what resources and technology I used. I show how, as a digital humanities project, my work is at the intersection of technology, language, and Latin American studies.

Dr. Clayton McCarl, Dr. Sarah Mattice
Languages, Literatures and Cultures, Digital Humanities, International Studies

A Hand of Bridge – A Contemporary Music Concert

Nicole Knorr

A Hand of Bridge is one of Samuel Barber's later operas, composed in 1959. The work features a libretto by composer Gian-Carlo Menotti. It is one of the shortest regularly performed operas, lasting only nine minutes. The opera follows a pair of couples playing their nightly game of bridge. The music is broken up into four ariettas and "card music," or, transitional material. Each arietta explores internal monologues that reveal the inner nature of each character. Our team's goal was to bring this fantastic opera to the University of North Florida's stage in order to share contemporary American music with students and faculty. We began working on the early production stages back in June, and rehearsals began in August. We met for two hours weekly to develop the music and staging of this work. The production's performance was on October 15, 2021, and the concert included other works written by Samuel Barber as well. The creation of this concert brought together students and faculty members of all different backgrounds–educators, performers, and our stage director, all of whom have widely varying experiences in the field of music. It was a pleasure to learn and grow from each other throughout the process of producing an entire show.

Dr. John Daugherty
Music

Horror Literature in the Digital Age

Stephanie Rosenstock

Horror stories have been around for thousands of years, and even today are still very popular, but the way horror stories interacted with today has changed a great deal with the worldwide adaption of the internet. This evolution from physical books to digital screens has affected the way people enjoy scary stories and has created a community known as creepypasta, along with a number of well-known modern monsters in pop culture today. This research paper shows how horror stories have changed due to the evolution of technology, and the ways in which members of the creepypasta community have interacted with the story of Slenderman which have helped the story to develop.

Dr. Jeffery W. Smith
English

Jacksonville Parks and Recreation – A Focus on Community

Rafe Thomas

In the Jacksonville Parks and Recreation, a sense of building-integrated spaces for urban communities is essential. Throughout this project, the focus is on Jacksonville's parks and historic sites. This project also focuses on making people aware of the upcoming "Duval County Bartram Trail," the Gullah Geechee people, important explorers, and the importance of community parks for the great city of Jacksonville. In Putnam County, Florida there is currently lots of signage covering Bartram's explorations and findings in various sites and trials. The city of Jacksonville plans to connect to the existing Putnam County Bartram Trail network and create an immersive, educational, recreational experience for all people. These sites will also cover lots of Jacksonville's history with explorers such as William Bartram who explored many different areas of Northeast Florida as well as documenting their Flora and Fauna. Other explorers documented include Jean Ribault who set off from France as an explorer and claimed Florida for France with his companion Rene Laudonniere. These two would establish Fort Caroline which would eventually fall at the hands of the Spanish. Lastly, local cultural communities' history such as the Gullah Geechee were observed in order to be recognized in upcoming trail sites.

Kelly Rhoden
Institute of Environmental Research and Education

The Process of Creating an Audio Drama Utilizing Narratives, Music Composition, and Foley Art

Amy Batten

Throughout history, humans have relied on oral traditions to keep the memories of the past alive. Stories told through spoken word have inspired the creation of symphonies, plays, operas, motion pictures, and various other medias. Technological advancements of the early 1900's led to the popularization of a strictly auditory form of media: radio dramas. Without the attention-grabbing power of costumes and set design, creators of these radio dramas relied heavily on script writing, music composition, and sound design to tell the story. This study explores the tools and techniques used in the process of creating an audio drama for modern applications. Newspaper articles from Duval and Nassau County, published in the 1920's, were sourced from the New York Times archives. The double murder detailed in the articles and case analysis provided by Harvard Law School's Caselaw Access Project was the foundation for the script. Interviews were also conducted with direct descendants of the two victims. After the script's creation, various musical elements were studied to create a melancholy score. Foley techniques used to record sounds in large open spaces produced the desired sound effects. Mixing and mastering techniques polished off the raw recordings. Minor keys with chord progressions utilizing augmented and diminished chords were found to create the desired effects when played on lower toned stringed instruments. The process of creating this audio drama relied heavily on script writing and manipulation of acoustic sounds through Foley techniques used in the recording process as well as post-production.

Dr. Joshua Tomlinson
School of Music Jazz Studies

Linking South African Healing Rituals to Contemporary Western Music Therapy Practices

Kara Evans

Music has been recognized and utilized as a universal vehicle for healing throughout cultures and religions. More specifically, music therapy is a practice that enables intervention amongst the client to promote health through musical relationships and experiences. Contemporary Western Music therapy practices demonstrate evidence-based therapy, structured sessions, and intensive training, whereas South African rituals illustrate a spiritual foundation and freedom amongst sessions. While these two approaches have stark differences in practices, the goal of this research is to explore the commonalities and possible applications of South African healing rituals to contemporary Western practices. For example, I want to uncover what intercultural integrations can be created to enhance music therapy from a global perspective. Researching scholars from Western Music therapy guides and South African case studies provided evidence of links between trans-personal goals of Guided Imagery and Music and the out of body experience found within the midst of the "ngoma" ritual. Furthermore, this ritual

place music as the center of the client's transformation, linking directly to the goals of Free Improvisation therapy. Thus, with similar values, it is imperative that these practices learn from their differences. While these findings are helpful, I believe they have just begun to scratch the surface regarding intercultural integrations of music therapy. This research should serve as a catalyst rather than a final answer as to the transformation of music therapy approaches globally.

Dr. McCarl, Dr. Mattice
International Studies, Interdisciplinary Studies

Going Green one Film at a Time: Producing an Introductory video for My Green Doctor

Cameron Tefft

Over the course of 3 months, I worked closely with the executive director of the My Green Doctor Foundation, Dr. Todd Sack, to produce a new introductory video for the foundation's website. My Green Doctor is dedicated to educating both health professionals and patients about the interconnectedness of climate health and the health of people, offering multiple resources for health professionals interested in implementing greener practices in their offices, or patients curious about how a changing climate might affect their health. My introductory video explains each step of the program available to health professionals and highlights all the content that is covered. A large part of the process involved establishing the tone of the video and narrowing down what content from the website was most relevant to someone thinking about implementing the program. The 'meeting-by-meeting guide' became a focal point of the video because it is an integral part of the education process of staff at participating offices. In the end, I produced a succinct video that while informative was not a bore to watch, and should get more health professionals interested in My Green Doctor.

James Taylor, Kelly Rhoden
Institute of Environmental Research and Education,
UNF STEP lab

"Editing, Research, and Pedagogy with Archival Materials from the African American History of North Florida"

Amelia Dixon

In the fall of 2021, I participated in an internship that was centered around the Viola Muse Digital Edition (VMDE), which is a collection of papers authored by Viola Muse between 1936 to 1937 for the Federal Writers' Project. Once completed, the Digital Edition will make Muse's writing much more accessible to the public and will help shed light on Jacksonville's African American history, and the tasks that I was responsible for primarily involved preparing the items in the collection for publication in a digital format. In addition to transcribing documents and editing for structure, appearance, semantics,

and regularization, I performed comparative research in order to locate editorial discrepancies between the original documents and other versions that had been published in the past. This internship led to a second, which I began in the spring of 2022, that focused on creating a framework for developing pedagogical materials that would allow educators to teach local African American history in schools by using the various open–access digital projects based at the University of North Florida. My poster presentation will examine my work with the Viola Muse Digital Edition in more detail, describe the research and collaborative efforts that I have been a part of this spring, and discuss how these experiences have shaped my future academic and professional plans.

Dr. Clayton McCarl, Dr. Sarah Mattice
Languages, Literatures and Cultures, Digital Humanities, International Studies

The Process of Creating an Audio Drama Utilizing Narratives, Music Composition, and Foley Art

Amy Batten

Throughout history, humans have relied on oral traditions to keep the memories of the past alive. Stories told through spoken word have inspired the creation of symphonies, plays, operas, motion pictures, and various other medias. Technological advancements of the early 1900's led to the popularization of a strictly auditory form of media: radio dramas. Without the attention-grabbing power of costumes and set design, creators of these radio dramas relied heavily on script writing, music composition, and sound design to tell the story. This study explores the tools and techniques used in the process of creating an audio drama for modern applications. Newspaper articles from Duval and Nassau County, published in the 1920's, were sourced from the New York Times archives. The double murder detailed in the articles and case analysis provided by Harvard Law School's Caselaw Access Project was the foundation for the script. Interviews were also conducted with direct descendants of the two victims. After the script's creation, various musical elements were studied to create a melancholy score. Foley techniques used to record sounds in large open spaces produced the desired sound effects. Mixing and mastering techniques polished off the raw recordings. Minor keys with chord progressions utilizing augmented and diminished chords were found to create the desired effects when played on lower toned stringed instruments. The process of creating this audio drama relied heavily on script writing and manipulation of acoustic sounds through Foley techniques used in the recording process as well as post-production.

Dr. Joshua Tomlinson
School of Music Jazz Studies

2022 International Saxophone Symposium

Antonio Vergara

The International Saxophone Symposium is hosted by the United States Navy Band and is held each year in early January. It is a two-day event that features a mix of performances, masterclasses, and lectures designed for musicians of all ages. The symposium showcases the prominence of the saxophone in both classical and jazz literature through the two concerts on Friday and Saturday nights, which feature several guest artists. This year was the first annual Navy Band Saxophone Symposium Jazz Competition, in which the winner had the opportunity to perform with the Navy Commodores, the premier Navy Jazz Ensemble. I submitted video recordings of three selections, each of contrasting styles. This past November, I was fortunate enough to receive news that I was selected as the competition's winner. Unfortunately, due to COVID-19 concerns, the Saxophone Symposium was canceled. I would have had the opportunity to be featured in the Saturday concert along with the Navy Commodores and Melissa Aldana, a Grammy-nominated saxophonist. This was an excellent opportunity for me as I would have had the chance to perform with the prestigious musicians of the Navy Commodores and Melissa Aldana. I would have traveled to George Mason University in Fairfax, Virginia, on January 13th to begin rehearsals with the Commodores and would have performed on the evening of the 15th. This was a fantastic opportunity for the continuation of my growth and exposure to larger stages, and I was looking forward to representing UNF's School of Music at the International level.

Todd DelGiudice
School of Music Jazz Studies

Barriers to Refugee Women's Sexual and Reproductive Health after Immigrating

Emma Cartwright

Thousand of people every year become refugees and are forced to leave their homes and resettle in new places, facing many challenges and hardships. For refugee women from the Middle East and northern Africa one issue they experience is barriers to their sexual and reproductive health care after resettlement in Australia, Canada, and the United States. Through my research, three main types of barriers were found: education, communication, and cultural barriers. There are many issues and challenges refugees face after resettlement. However, I wanted to focus my research on an issue specific to refugee women, which is why I chose sexual and reproductive health care barriers. I started my research with the simple research topic of "refugee women issues". Through my research, I narrowed my research question to "what is preventing refugee women from the Middle East and northern Africa from seeking out sexual and reproductive health care services?". I read and analyzed many peer-reviewed journal articles that used focus group and individual interviews to find their data. These direct quotes provided beneficial insight to what these refugee women experience before and after resettlement. I discovered how inaccurate or incomplete translations, inadequate or incorrect educational information, and differences in cultural practices can all be barriers to women refugees sexual and reproductive

health care. Health care providers must focus on overcoming these barriers for women refugee patients who have resettled in their countries.

Dr. Clayton McCarl, Dr. Sarah Mattice
International Studies Program, Interdisciplinary Studies Program

The Dayton Accords: A Legacy of Instability and Mono-Ethnic Divides in Bosnia and Herzegovina

Lamija Hodzic

This project focuses on the various issues that have developed in Bosnia and Herzegovina as a result of the destabilizing effects of the Dayton Accords. This work delves into the basis of Bosnia's government set up by the peace agreement and how the forced cooperation between conflict-stricken groups has only contained tensions and left the larger issues unaddressed. It provides insight on key factors found in the Accords that have contributed to mono-ethnic divides in the country at all levels. Subsequently, it is conveyed how this has contributed to internal instability in Bosnia and Herzegovina. The problem surrounding the Dayton Accords is approached by finding key laws in the agreement that are directly connected to the issues within the country. It is found that the Accords provide a framework for cooperation within Bosnia, but the forceful attempt at achieving this has led to Bosnia's failure in progressing. Therefore, the various problems in Bosnia are assessed using sources that connect to the Dayton Accords. They write on the conditions under which the agreement was signed, the plight stemming from corruption and nationalism buried within the government, and the nature of contemporary politics in Bosnia. Linking these elements through various works developed the unbiased conclusion that the deficiencies of the Dayton Accords must be properly addressed and reformed.

Dr. Mattice, Dr. McCarl
Languages, Literatures, and Cultures, Philosophy

Generational Trauma of Indigenous Australians through White Assimilation

Mya Taylor

The root of my research paper is the argument that the Europeans who colonized Australia viewed an all-white society as civilized, thus leading to the white assimilation of the native Aboriginal and Torres Strait Islanders. The European-Australians caused Indigenous people to suffer generational trauma through rapid social changes, something that still plagues the society today. The premise of my paper is to specifically argue the damage that the "Bringing Them Home" Act caused, even after the act was dismantled. There were still bills put into place to further white assimilation, attacking Aboriginal and Torres Strait Islanders families by the separation of children from their parents. Due to rapid social change, this passed on traumas from generation to generation, creating what is known as generational trauma.

During my research for this paper, I wanted to connect the "Bringing Them Home" Act to prevalent issues. For example, the "Bringing Them Home" Act can be connect to acts that were implemented later in the 1900s to show a domino effect. To achieve this, I would often revert back to my main point and connect them towards the end of my paragraphs, which kept the reader away from any confusion they might have on the topic.

Dr. Clayton McCarl, Dr. Sarah Mattice

Effects of Venezuela's refugee crisis in Colombia

Karena Lopez

This project focuses on the consequences that neighboring country Colombia has faced due to Venezuela's deteriorating humanitarian state. This work delves into the effects of the Venezuelan refugee crisis on Colombia and how the situation has worsened due to an influx of refugees entering Colombia at a rapid pace. It provides further insight into the numerous main effects found on Colombia due to the Venezuelan crisis and details the extent of these effects on the Colombian government. The situation occurring in Colombia is approached by finding multiple peer-reviewed sources that suggest that the Venezuelan refugee crisis negatively affects Colombia. It is found that the Venezuela refugee crisis is harming Colombia's border security, economy, and humanitarian and social institutions. Despite the Colombian government's efforts to help Venezuelan refugees, the lack of funding has a series of unintentional consequences for Colombia. Therefore, the Venezuelan humanitarian crisis is affecting Colombia in various wise as Venezuelan citizens are forced to flee their home country in search of assistance and urgent help. The influx of refugees entering Colombia suggests some negative outcomes for Colombia despite the Colombian government's efforts to help Venezuelan refugees. The findings indicate that the Venezuelan refugee crisis is negatively impacting Colombia's institutions and national security and the need for further research.

Dr. McCarl, Dr. Mattice
Languages, Literatures, and Cultures, Philosophy

Arts & Humanities

Graduate Research

Beauty, Culture, and Play: Ninah Cummer and Jacksonville's Playgrounds

K. Anagnostou

In addition to founding the Cummer Museum of Art & Gardens as "a center of beauty and culture" in Jacksonville, Ninah May Holden Cummer (1875-1958), supported many efforts nationally and locally, ranging from the American Red Cross to Brewster Hospital. The present study focuses on Ninah's impact on Jacksonville and beyond through the establishment and care of playgrounds and nearly a half-century of leadership in the National Recreation Association. With the Jacksonville Woman's Club, Ninah established one of the first playgrounds in the city in 1907 and remained a lifetime advocate for parks and recreation. Ninah founded the Garden Club of Jacksonville which became a driving force behind Jacksonville city planning and the maintenance and improvement of local parks and playgrounds. Ninah's concern extended globally, too, and she supported the international expansion of the National Recreation Association into the mid-twentieth century. Ninah received invitations to the White House, promoted public recreation through the Great Depression and two World Wars, and witnessed the material evolution of playgrounds from sand and wood to Fiberglass and plastic. Ninah remained passionate into her final days about the playground and recreation movement and believed "that success will always crown our efforts." That spirit is still evident in Jacksonville today, like in the plan for Lift Evr'y Voice and Sing Park in LaVilla. The vision of Jacksonville as a city with a vibrant recreation scene is not new; we can look at examples from our past to build a more playful future.

Dr. Laura Heffernan
English

Interpreting Red Hill Cemetery: Resistance in Waycross

Tanner Anderson

This poster discusses work undertaken by graduate and undergraduate students in Dr. Felicia Bevel's class Blackness and the Archives and is one third of the total work from the course. It explores facets of Red Hill cemetery, a historically black cemetery located in the city of Waycross in Ware county, Southern Georgia. Red Hill cemetery was used by the black community of Waycross throughout the 19th and early 20th century, but slowly fell into disuse in the mid 20th century, eventually being damaged by development projects and overgrowth. This poster is part of larger efforts undertaken by the History, Anthropology, and Geography departments of UNF, and the work

Interpreting Red Hill: Uncovering Violence at the Cemetery

C. Lynne Hemmingway

For several years, the University of North Florida has partnered with the Okefenokee Heritage Center to document Waycross, Georgia's oldest African American cemetery, Red Hill Cemetery, the people buried in it, and their descendants. In the Spring of 2022, the course "Blackness and Archives" recruited graduate and undergraduate students to contribute to the Red Hill Cemetery Project by creating online narrative essays on several themes apparent in the sources preserved by the project. This presentation describes the work of students, led by Lynne Hemmingway, assigned the topic of "violence, and their examination of both extreme and mundance forms of violence related to Red Hill Cemetery and the larger Waycross community. Students specifically examined archival material such as historical newspaper articles and death certificates of those interned at Red Hill to explore Black premature death within the larger context of lynching and other forms of racial violence like historical erasure and medical discrimination. Highlighting a few primary sources of note, this presentation summarizes a portion of the forthcoming online essay which explains how lynching and its consequences can be seen or implied in Waycross. Borrowing from Marisa J. Fuentes' understanding of archival violence (Fuentes 2016), this presentation ultimately demonstrates the importance of recovering marginalized Black histories in the silent spaces of the archive.

Dr. Felicia Bevel
Department of History

Can You Have the Holy Spirit Without Haze? Tracking Contemporary Worship Music's Strange History

Diego Salinas

The modern Evangelical church has largely adopted the genre of Contemporary Worship Music into its services: a glossy, highly-produced music style with millions of fans around the world. The meteoric rise of this music genre caused churches worldwide to see wide reaching changes in the act of worshiping and, most importantly, the performance of worship music during a church service. This paper seeks to understand the impact that Contemporary Worship Music has had on churches by tracking its often confusing history from its origins in the Jesus People movement of the 1970s to its current multi-million dollar industry. Through the lens of historical musicology, a clear relationship can be drawn between the rise of the megachurch and the subsequent spread of Contemporary Worship Music — further framing this phenomenon within aspects of capitalism and evangelicalism.

Dr. Judith Ochrietor
Office of Undergraduate Research