4-13-2023

2023 Undergraduate Research Competition Program

Coastal Carolina University

COASTAL CAROLINA UNIVERSITY

Undergraduate Research Competition

April 11, 12, and 13, 2023

The Undergraduate Research Competition is a spring tradition at Coastal Carolina University. This year, students and faculty mentors from different majors and all university colleges have worked to produce both oral presentations and poster presentations. These are the results of months, and in some cases years, of effort on undergraduate research projects and demonstrate the strength of undergraduate research at CCU. Congratulations, presenters!

Program Overview

Tuesday, April 11, 2023 Undergraduate Research Competition & Sustainability Symposium

8:00am– 10:00am Oral Presentations – LISU A-201, LISU A-213, & Coastal Theatre
10:00am--12:00pm Poster Presentations Lib Jackson Rotunda
12:00pm – 2:00pm Sustainability Grant Awardee Presentations – LISU A-201, LISU A-213 and LISU A-214
2:30pm- 3:30pm Panel Discussion: Intersectional Environmentalism LISU Coastal Theatre
3:45pm- 4:45pm Panel Discussion: Climate Resilience –LISU Coastal Theatre
5:30pm – 7:00pm Keynote Address – Dr. Katharine Hayhoe – Wheelwright Auditorium

Wednesday, April 12, 2023 Undergraduate Research Competition

12:00pm – 4:00pm Oral Presentations – LISU A-201, LISU A-213, & Coastal Theatre
4:00pm-- 6:00pm Poster Session II – Lib Jackson Rotunda

Thursday, April 13, 2023 Undergraduate Research Competition

12:00pm-2:00pm Poster Session I – Lib Jackson Rotunda
2:00pm-4:00pm Oral Presentations – LISU A-201, LISU A-213, & Coastal Theatre
4:00pm-6:00pm Dr. Wes Fondren and Judith Zang in the Coastal Theatre Present: "How to Apply for Graduate Programs and Post-graduate and Undergraduate Scholarships"

2023 Undergraduate Research Competition Schedule

ORAL PRESENTATIONS

Tuesday, APRIL 11, 2023 8:00am-10:00am

	ROOM 1 LISU A-110	ROOM 2 LISU A-201	ROOM 3 LISU A-213
8:00AM	**Schaefer-Ortega, Leigha Biology** Improving the Mental Health Crisis in Georgetown County Through a Small Business Lens Faculty Research Mentor: Pamela Martin, Political Science	**Defreitas, Matthew, Biology** Systematic Characterization of Mycobacteriophage Gene Function on Bacterial Cell Growth Faculty Research Mentor: Daniel Williams, Biology	**Surface, Hannah, Public Health** Drinking Habits of Freshmen College Students and the Health Belief Model Faculty Research Mentor: Michael Dunn, Public Health
8:20AM	**Cilino, Katelyn, Sustainability and Coastal Resilience** Sustainable Business Certifications and a Practical Application Faculty Research Mentor: Andrew Busch, Sustainability and Coastal Resilience	**Ghering, Trinity, Biochemistry and McKinley Chapman, Exercise and Sports Science** Anxiety, Depression, and Social Media Usage by Gender and Race in a College-Age Population Faculty Research Mentor: Sharon Thompson, Swain Scholars, Health Sciences	**Scholl, Colin, Psychology** Implicit Learning of Chinese Radical Position Faculty Research Mentor: Andrew Terranova, Psychology
8:40AM	**Brown, Dyneira, Communications, Media and Culture** “Get ready, Ladies”: A Content Analysis on Women’s Representation in Superhero Films Faculty Research Mentor: Corinne Dalelio, Communications, Media and Culture	**Berrocal, Jacob, Marine Science** Seasonal length-Biomass Relationships for Juvenile Spot *(Leiostomus xanthurus)* Faculty Research Mentor: Juliana Harding, Marine Science	**Hatcher, Abigail, Public Health, Alyssa Avallone, Exercise and Sports Science, Clare Cuenya, Public Health and Caitlyn Flemmer, Biology** Mental Health Literacy, Sleep Disturbances, and Mental Health among Those in Educational Settings Post-Pandemic

			Faculty Research Mentor: Sharon Thompson, Swain Scholars, Health Sciences
9:00 AM	**Smith, Madison, Interdisciplinary Studies, Holly Taylor and Katey Zimmerman, Sustainability and Coastal Resilience** Mercury Contamination in the Caribbean Faculty Research Mentor: Russell Fielding, Sustainability	**Schuetze, Madeline, Marine Science** Striped Blenny Presence and Behavior between Sunrise and Sunset at Oyster Landing, South Carolina Faculty Research Mentor: Juliana Harding, Marine Science	
9:20AM	**Zimmerman, Katelyn, Sustainability and Coastal Resilience** Aquifer Storage and Recovery Wells (ASRs) Faculty Research Mentor: Pamela Martin, Political Science	**Mouer, Nora, Marine Science** Prevalence and density of *Perkinsus marinus* in *Crassostrea virginica* from Murrells Inlet and North Inlet, SC Faculty Research Mentor: Juliana Harding, Marine Science	
9:40AM	**Meagher, Michael, Public Health** Best Practices in Comprehensive Planning for the Promotion of Sustainable Development in Georgetown County, South Carolina Faculty Research Mentor: Pamela Martin, Political Science		

Wednesday, APRIL 12, 2023 12:00pm-4:00pm

	ROOM 1 LISU A-110	ROOM 2 LISU A-201	ROOM 3 LISU A-213
12:00PM	**DeCordova, Celina, Digital Cultural and Design and Gianna Casey, History** Welcome to CCU: Crisis Care University: A Visceralization of Undergraduates' Mental Healthcare Faculty Research Mentor: Matthew Murphy, Psychology	**McCoy, Nina, Aaron Osborn, Hannah Simchock, Sustainability and Coastal Resilience** Coastal Charge Faculty Research Mentor: Pamela Martin, Political Science	**Magann, Noelle, Marketing** The Collegiate Response to Name, Image, and Likeness (NIL) Legalization within the SunBelt Conference Faculty Research Mentor: Fei Gao, Recreation and Sports Management
12:20PM	**Leer, Kainen, Engineering Science** Developing a Virtual Reality Module for Promoting Coastal Sustainability Faculty Research Mentor: Xiangxong Kong, Chemistry and Alex Fegely, Instructional Technology	**Allen, Cierra, Political Science** Microtargeting Strategies in State Judicial Campaign Advertising Faculty Research Mentor: Frederick Wood, Political Science	**Magann, Noelle, Marketing** An Analysis of SunBelt Football Athletes Engagement Rates on Instagram Faculty Research Mentor: Heather Carle, Marketing
12:40PM	**McIewee, Grace, Computer Science** Online Classification of Shock and Vibrational Data Using Convolutional Neural Networks Faculty Research Mentor: Nathan DeBardeleben, Los Alamos National Laboratory	**Morrell, Brooke, Political Science** Hazard Mitigation Plans and Sustainable Communities Faculty Research Mentor: Pamela Martin, Political Science	**Charlton, Makehna, Finance** Workforce Housing Faculty Research Mentor: Pamela Martin, Political Science
1:00 PM		**Denny-Lybbert, Connor, Political Science**	**Cuozzo, Teryn, Musical Theatre and Dance**

		Investigating Public Transportation Solutions at Coastal Carolina University Faculty Research Mentor: Michael Promisel, Political Science	Unquestioned: A Half Hour Dance Concert That Explores the Effects of Herd Mentality on Minority Groups and The Environment Faculty Research Mentor: Ben Sota, Physical Theatre, Adam Pelty, Musical Theatre and Dance
1:20PM		**Bane, Allison, Political Science** Immigrants tie to Crime and Victimization in the United States Faculty Research Mentor: Mikel Norris, Political Science	
1:40PM	**Cutaia, Tyler, Biology** Conditioning Pigeons to Switch a Decision-Making Strategy Faculty Research Mentor: Matthew Murphy, Psychology	**Leo, Samantha, Psychology** The Relationship between Mock Juror Gender and Police Officer Gender on Judgments of Police Use of Force Faculty Research Mentors: Melissa Baker and Andrew Terranova, Psychology	**Chowning, Eden, Music Performance** Being A Musician with A Disability Is Okay Faculty Research Mentor: Eric Schultz, Music
2:00PM		**Butler, Tracey, Psychology** Emotional Intelligence, Empathy, Political Beliefs, and Educational Background Faculty Research Mentor: Andrew Terranova, Psychology	**Spennicchia, Ryan, History** The City of Conway, South Carolina: Race, Business, and the Untold African American Diaspora Faculty Research Mentor: Aneilya Barnes, History

2:20PM	**Kinerson, Emma, Biology** Effect of Endophytes on Anethum Graveolens (Dill), Synthesis of Volatile Organic Compounds Faculty Research Mentor: Michelle Barthet, Biology	**Pruett, Noah, Psychology** Do Mock Jurors' Attitudes Relate to Jurors' Verdicts of Police Use of Excessive Force According to 18 U.S.C. § 242? Faculty Research Mentor: Melissa Baker, Psychology	**Johnson, Ruthie, History** City of Conway: Historical African American Churches Faculty Research Mentor: Aneilya Barnes, History
2:40PM			**Butler, Sean, History** The City of Conway: Historical Homes and Cultural Identity Faculty Research Mentor: Aneilya Barnes, History
3:00PM	**Schroeder, Lea, Marine Science** Juvenile Spot (*Leiostomus xanthurus*) Age and Growth in Two North Inlet, S.C. Tidal Creeks Faculty Research Mentor: Juliana M. Harding, Marine Science	**Bartosh, Madeline, Psychology** The Effects of Stress and the Own-Race Bias on Eyewitness Identification Accuracy Faculty Research Mentor: Andrew Terranova, Psychology	**Johnson, Arune, History** Historical Homes on Elm Street in Downtown Conway Faculty Research Mentor: Aneilya Barnes, History
3:20PM	**Hura, Emily, Marine Science** Juvenile Spot *Leiostomus Xanthurus* Age and Growth in Tidal Creek Nursery Habitats (North Inlet Estuary, SC) Faculty Research Mentor: Juliana M. Harding, Marine Science	**Walser, Christina, Sociology** First Responder Crossover and the Effect on Work-Life Balance Faculty Research Mentor: Danny Malone, Political Science	

3:40PM	**Vaughan, Alexis, Marine Science** Exploring Relationships of Evaporation Duct Height with Wind Speed and Humidity Faculty Research Mentor: Erin Hackett, Marine Science		

Thursday, APRIL 13, 2023 2:00pm-6:00pm

	ROOM 1 LISU A-110	ROOM 2 LISU A-201	ROOM 3 LISU A-213
2:00PM	**Wells, Arin, Graphic Design** Changing the Nation One Image at a Time: How Graphic Design Advanced the American Civil Rights Movement Faculty Research Mentors: Victoria Pickett, Graphic Design and Sara Rich, Honors and Interdisciplinary Studies	**Thomas, Kyla, Biology** Generating a Gene Library of Bacteriophage Phayonce Faculty Research Mentor: Daniel Williams, Biology	
2:20PM	**Torres-Paraizo, Pedro, English** Provocative, Unorthodox, and Ultimately Transgressive: How the Antinomian Spirit of the Velvet Underground's White Light/White Heat Shaped Heavy Music Faculty Research Mentor: Steven Hamelman, English	**Parker, Ra-Quelle, History** The Holocaust Experienced by Jewish Women Faculty Research Mentor: Philip Whalen, History	

2:40PM	**Kynard, Jainah, Applied Physics** Demonstrating Dispersion Relations with a Classical System Faculty Research Mentor: Scott Carr, Physics and Engineering Science	**Wilson, Robynn, Communication** Media Portrayals of Crime and the Implications of Images accompanying Stories Faculty Research Mentor: Pamela Martin, Politics	
3:00PM	**Flick, Hannah, intelligence and National Security** Chinese Foreign Influence Activities Faculty Research Mentor: Joseph Fitsanakis, Intelligence and National Security	**Bruno, Madison, Marine Science** Ocean Wave Optimization using In-situ Buoy Measurements Faculty Research Mentor: Erin Hackett, Marine Science	
3:20PM	**Davis, Clayton, Intelligence and National Security** Police Departments and Cities Economies Faculty Research Mentor: Pamela Martin, Politics	**Osborn, Aaron, Sustainability and Coastal Resilience** Green Space Building Social Capital Faculty Research Mentor: Pamela Martin, Political Science	
3:40PM	**Beam, Riley, Applied Mathematics** Group Theory Structures in Bobbin Lace Faculty Research Mentor: Thomas Hoffman, Mathematics & Statistics	**Cook, Isaiah, Physical Theatre** Juggling Shakespeare: A Transnational Performance of Rhythms, Metaphor, and Imagination Faculty Research mentor: Benjamin Sota, Physical Theatre	

4:00PM		**Walters, Avery, Biochemistry and Chemistry and Eric Shultz, Theatre** Proxima Will Freeze Faculty Research Mentor: Dory Sibley, Theatre	

POSTER PRESENTATIONS

Session I: Tuesday, April 11, 2023 10:00am-Noon
Session II: Wednesday, April 12, 2023 4:00pm-6:00pm
Session III: Thursday, April 13, 2023 12:00pm-2:00pm

POSTER SESSION I
Tuesday, April 11, 2023 10:00am-Noon

1. **Frantz, Nicole, Biochemistry**
   Developing a Safe and Effective Papillomavirus Screen to be used on College Students
   Faculty Research Mentor: Paul Richardson, Chemistry
2. **Chestnutwood, Alexei, Biochemistry**
   Environmental Bacteriophage Presence in the Drainage Ponds at Coastal Carolina University
   Faculty Research Mentor: Paul Richardson, Chemistry
3. **Hanson, Nicholas, Biochemistry**
   The Effect of Water Ionic Chemistry on the Total Polyphenol Content of Kombucha
   Faculty Research Mentor: Drew Budner, Chemistry
4. **N/A**
5. **Cole, Elizabeth, Biology**
   3-D models for Chemistry Education
   Faculty Research Mentor: Kevin McWilliams, Chemistry
6. **Fowler, Zarah, Biology**
   Identification of a Small Regulatory RNA UspS Associated with the Universal Stress Protein in Lactobacillus Species
   Faculty Research Mentor: Brian Lee, Chemistry
7. **Mazariego, Marissa, Biology**
   Evolutionary Analysis of Plastic-Degrading Enzyme PETase Found in the Endophytic Microbiome of Marine Viridiplantae for Phytoremediation
   Faculty Research Mentor: Michelle Barthet, Biology
8. **Foust, Elena, Biology and Garrett, Heather, Biology** **Clean here forward**
   Specifying an Identified Lncrnas Modulation in Cellular Processes during Early Embryonic Development of Nicotiana Tabacum Seedlings
   Faculty Research Mentor: Michelle Barthet, Biology
9. **Carruthers, Carson, Exercise and Sport Science**
   The Effect of Acute Creatine Supplementation on Non-Invasive Assessment of Vascular Function Using Flow-Mediated Dilation
   Faculty Research Mentor: Timothy Rotarius, Kinesiology
10. **Carter, Cade, Exercise and Sport Science**
    Attenuation of VO2 Slow Component during Heavy-intensity Interval Exercise
    Faculty Research Mentor: Jakob Lauver, Kinesiology
11. **Sossaman, John, Exercise and Sport Science**
    Physiological Effects of Intervals Duration during Aerobic Exercise with Blood Flow Restriction
    Faculty Research Mentor: Justin Guilkey, Kinesiology
12. **Melton, Riley, Exercise and Sport Science**

Comparison of Tonal and Free Weight Back Squat Workouts on Muscle Activation, Muscle Oxygenation and Fatigue
Faculty Research Mentor: Justin Guilkey, Kinesiology

13. **N/A**
14. **Cannon, Mackenzie, Health Administration**
    South Michigan Food Bank Food Insecurity Dashboard
    Faculty Research Mentor: Stephen Borders, Health Administration
15. **Shoop, Margaret, Languages and Intercultural Studies**
    The Impact of PRC Language Policies on Minority Languages of China
    Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
16. **Huntzberry, Paige, Marine Science and Jo Whitney, Sustainability**
    Comparative Analysis of Implementing Solar Energy in South Carolina
    Faculty Research Mentor: Pamela Martin, Political Science
17. **Antolak, Alyssa, Marine Science**
    Seasonal Fluctuation of Nutrients That Lead to Microcystis Bloom Development in Wall Pond, Coastal Carolina University
    Faculty Research Mentor: George Boneillo
18. **Dellinger, Georgia, Marine Science**
    Floating Anthropogenic Debris in Estuarine Systems
    Faculty Research Mentor: Till Hanebuth, Marine Science
19. **Mina, Charles, Marine Science**
    Identifying Overwash Layers in Marsh Sediment
    Faculty Research Mentor: Zhixiong Shen, Marine Science
20. **N/A**
    Determination of Heavy Metals in Coquina Clams using Graphite Furnace Atomic Absorption Spectroscopy
21. **Harris, Kylie, Political Science**
    The Impacts of DACA on Migrant Children and Young Adults and What Actions Should be Taken
22. **Murray, Caroline, Psychology**
    Ecofeminism: Gender and Word Associations
    Faculty Research Mentor: Andrew Terranova, Psychology
23. **Bretton, Adam, Psychology**
    Eating Disorders, Depression, and Anxiety: A Multivariate Survey of College Students

POSTER SESSION II

Wednesday, April 12, 2023 4:00pm-6:00pm

1. **Weissmeier, Emma, Exercise and Sport Science**
   Developing a Test to Detect Heartworm in Mosquitoes
   Faculty Research Mentor: Paul E. Richardson, Chemistry
2. **Tingler, Anna, Trinity Ghering, and Samuel Ross, Biochemistry**
   A Fisher Indole Synthesis approach to Phidianidine Analogues
   Faculty Research Mentor: Bryan Wakefield, Chemistry
3. **Pettijohn, Ana and Claire Romain, Biochemistry**
   A New Approach to the Core of Flinderole C
   Faculty Research Mentor: Bryan Wakefield, Chemistry
4. **Rose, Finn, Biochemistry**
   Identification and Analysis of the regulatory RNA TrmS in the probiotic bacteria Streptococcus thermophilus
   Faculty Research Mentor: Brian Lee, Chemistry
5. **Brown, Mallorie, Biochemistry, Elizabeth McCrea, Biology and Hannah McCutcheon, Biology**
   Effect of a serine protease on neurodegeneration using Alzheimer's fly model
6. **N/A**
7. **Christina, Gentile, Christina, Biochemistry and Sadie Disselkoen, Chemistry**
   Friedel-Crafts Reactions to Construct the Core of Flinderole C
   Faculty Research Mentor: Bryan Wakefield, Chemistry
8. **McCutcheon, Hannah, Biology, Elizabeth McCrea, Biology**
   Effect of Lactate Dehydrogenase in Alzheimer's Disease Using Fruit Fly Model
   Faculty Research Mentor: Fang Ju Lin, Biology
9. **Greco, Alexandra, Emily Bishop, Emma Hofseth, Biology and Kelsi Phelps, Marine Science**
   The Importance of Processing and Understanding Bacteriophages
   Faculty Research Mentor: Daniel Williams, Biology
10. **Earley, Warren, Nestor Llanot Arocho, Brittney Mazen, Biology**
    Genome Annotation of phages Phayeta and Greco Etereo
    Faculty Research Mentor: Daniel Williams, Biology
11. **Thompson, Gregory, Biology**
    Utilizing 3D Printing as a Method of Engaging Students and Assisting in the Learning Spatially Challenging Concepts
    Faculty Research Mentor: Kevin McWilliams, Chemistry
12. **Bellos, Logan, Languages and Intercultural Studies**
    South Germany: Integrating German Speakers Into Latin American Societies
    Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
13. **Timmons, Destanee, Languages and Intercultural Studies**
    France through the Eyes of African Migrants in Contemporary France
    Faculty Research Mentor: Edurne Beltran de Heredia, Language and Intercultural Studies
14. **Yazvac, Tess, Languages and Intercultural Studies**
    An Assessment of Kashmir and Linguistic Plurality in South Asia
    Faculty Research Mentor: Edurne Beltran de Heredia, Languages and intercultural Studies
15. **Solis-Aguilar, Karina, Political Science**
    "Generation Mei Ming": Dual Identity Challenges for Chinese Adoptees in Spain
    Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies

16. **DAiello, Mary, Languages and Intercultural Studies**
    The North African Move to Italy: How and Why?
    Faculty Research Mentor: Edurne Beltrán de Heredia, Languages and Intercultural Studies
17. **Wade, Tionna, Languages and Intercultural Studies**
    A Study of China's Historical and Cultural Impact on Korea
    Faculty Research Mentor: Edurne Beltran de Heredia Carmona, Language and Intercultural Studies
18. **Reyes-Campuzano, Antonio, Language and Intercultural Studies**
    Acculturation and Career Aspirations within Hispanic Communities: Investigating the Impact of Culture and Identity on College Completion and Representation within STEM
    Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
19. **Richa, Grace, Marine Science**
    Telling Their Story: Identifying Stranded Bottlenose Dolphins Using Dorsal Fin Photo-Identification to Match Known Individuals
20. **Cook, Anna, Psychology**
    Embryonic Anoxia Alters Exploratory Behavior in Juvenile Leopard Geckos
    Faculty Research Mentor: Ryan Yoder, Psychology
21. **Daly, Delaney, Special Education**
    Let's Get Involved
    Faculty Research Mentor: Nicole Uphold, Special Education
22. **Brettler, Sophia, Exercise and Sport Science**
    Electromyographical Difference Between Tonal and Free weight exercises
    Faculty Research Mentor: Jakob Lauver, Kinesiology
23. **Thomas, Meghan, Exercise and Sport Science**
    Energy Availability in Female Collegiate Beach Volleyball Athletes
    Faculty Research Mentor: Brandon Willingham, Chemistry
24. **DeCordova, Celina, Communication, Digital Culture and Design, Max Scivetti, History**
    Historical Narratives: American and Japanese Perspectives on Pearl Harbor
    Faculty Research Mentor: Bridget Nolan
25. **Davis, Julianna, Engineering**
    Leipzig Applicator Dose Study Progress and Mesh Computational Phantoms
    Faculty Research Mentor: Wes Hitt, Physics and Engineering
26. **Simmons, Christian, Accounting**
    The Influence of Central American Victuals on American Cuisine
    Faculty Research Mentor: Edurne Beltran de Heredia Carmona, Languages and Intercultural Studies
27. **N/A**

POSTER SESSION III

Thursday, April 13, 2023 12:00pm-2:00pm

1. **Brick, Theresa, Anthropology and Geography**
   Developing Narrative Content for the Virtual Shikoku Pilgrimage Immersive Platform Faculty Research Mentor: Susan Bergeron, Anthropology and Geography
2. **Kinavey, Peyton, Biology**
   The Human Superiority Complex
   Faculty Research Mentor: Sara Rich, Honors
3. **Hollins, Acacia, Biology and Kristen Presnell**
   Bacterial Two-Hybrid Assay of Interactions between MatK and Chloroplast Proteins RNC1 and WTF1
   Faculty Research Mentor: Michelle Bartlet, Biology
4. **Kinerson, Emma, Michael Moore, and Brandon Lafayette, Biology**
   Bioinformatics Tool Kit for Interpreting Genome Sequencing in Bacteriophages
   Faculty Research Mentor: Dan Williams, Biology
5. **Hagood, Tiquasha, Graphic Design**
   The Exploitation of Sarah Baartman's Body
   Faculty Research Mentors: Stephanie Miller and Elizabeth Howie, Keren Sheffield, Art History
6. **Schubert, Taylor, Intelligence and National Security Studies**
   Non-State Actors and International Crisis Outcomes, 1987-2017
   Faculty Research Mentor: Jordan Roberts, Intelligence and National Security Studies
7. **McNeil, Tiffani, Languages and Intercultural Studies**
   The Migration of Different Cultural Aspects Between the Early 20th Century French Art Movement and Chinese Immigrants
8. **Bermejo, Valentina, Languages and Intercultural Studies**
   Hispanic Population at Coastal Carolina University: An Analysis of Challenges and Adversity in Higher Education
   Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
9. **Othman, Deena, Languages and Intercultural Studies**
   Social, linguistic, and religious challenges among Muslim converts in Contemporary Spain
   Faculty Research Mentor: Edurne Beltran De Heredia, Languages and Intercultural Studies
10. **Shimp, Cierra, Marine Science**
    Understanding the Impacts of Storm Surge in Coastal Communities of SC: An Action Research Approach
    Faculty Research Mentor: Tatiana Height, Sustainability and Coastal Resilience
11. **Goldman, Kali, Psychology and Alex Fusee, Psychology**
    Do Attitudes toward Police Mediate the Relationship between Judgment Response Times and Judgments of Police Use of Force?
    Faculty Research Mentor: Melissa Baker, Psychology
12. **Batt, Jessica, Special Education**
    Language Objectives for English Language Learners
    Faculty Research Mentor: Rhonda Miller, Special Education
13. **Deal, Hannah, Special Education**
    Independent Living Outcomes of Young Adults with Intellectual Disabilities through Post Secondary Education

Faculty Research Mentor: Cheryl Morgan, LIFE Program

14. **Conroy , Caitlin, Special Education**
    Promoting Self-Awareness and Self-Advocacy for Students with Disabilities
    Faculty Research Mentor: Nicole Uphold, Special Education

2023 CCU Undergraduate Research Competition Abstracts

(In Alphabetical Order by Presenter)

Microtargeting Strategies in State Judicial Campaign Advertising (*Oral Presentation*)
Allen, Cierra, Political Science
Faculty Research Mentor: Frederick Wood, Political Science
The recent US Supreme Court decision in Dobbs to overturn Roe v. Wade removed the constitutional right to abortion from the 14th Amendment and returned the issue to state governments to regulate. In January 2023, the South Carolina Supreme Court ruled that a state law banning abortion after six weeks violates the state constitution's guarantee to the right to privacy. Although South Carolina is not one of them, most states use popular elections to select the justices of their high courts. Due to many decisions like these, the process of electing state Supreme Court justices has become increasingly important and is a growing field of study.
I propose to examine the ways in which candidates for these high court offices present themselves to voters in their campaign advertisements. This study will take a deeper look at the specific titles that candidates claim when referencing their name. Franz and Ridout (2010) found that voters are influenced by campaign advertising. Going further, the content of advertisements in judicial elections specifically also has been found to have an impact on voters (Hall and Bonneau 2013). My study will examine the transcripts of television advertisements from 2000 to 2022 to look for different microtargeting elements across the different types of election methods and candidate types. My focus will be on drawing connections between the use of these professional titles, candidate types (incumbent, challenger, open elections) and their impact on election outcomes to determine the effectiveness of different campaign strategies.

Seasonal Fluctuation of Nutrients That Lead to Microcystis Bloom Development in Wall Pond, Coastal Carolina University (*Poster Session*)
Antolak, Alyssa, Marine Science
Faculty Research Mentor: George Boneillo
The harmful cyanobacteria Microcystis globally dominates eutrophic freshwater systems. Eutrophication leading to nitrogen and phosphorus loading into aquatic systems is increasing bloom propagation and shifting diatom/dinoflagellate dominated systems to cyanobacteria dominated systems. Understanding seasonal variability and environmental parameters combined with nutrient loading will allow for better understanding of what factors are influencing Microcystis blooms. Biweekly plankton samples, environmental parameters, and nutrients were collected from Wall Pond from spring 2022-spring 2023. Nitrogen and phosphate limitation was examined by performing seasonal nutrient limitation experiments. Early results show that yearly plankton samples shifted from diatom dominated in the late summer-early fall to Microcystis dominated in late fall-early winter and then dinoflagellate dominated in late winter-early spring. Relationships between seasons, nutrients, and plankton assemblages will be discussed.

Immigrants tie to Crime and Victimization in the United States (*Oral Presentation*)
Bane, Allison, Political Science
Faculty Research Mentor: Mikel Norris, Political Science
Undocumented immigrants have been the subject of heightened political scrutiny over the course of recent presidential administrations. This scrutiny has painted immigrants as criminals, which has had a significant impact on their interactions with local and federal law enforcement. The purpose of this

research is to determine if undocumented immigrants are more likely to become victims of crime than citizens within the United States. Furthermore, the study aims to investigate the role that sanctuary cities play, if any, in reducing the level of victimization that undocumented immigrants experience. To evaluate these questions we turn to the National Crime Victimization Survey (NCVS) and conduct an analysis of the responses based on citizenship status. In addition to the NCVS data, this research requires a qualitative assessment of victimization factors in relation to immigrants and their social ties. The results of this study address the politicized tie of immigrants to crime, the victimization rates of immigrants, and the overall role that sanctuary cities play.

The Effects of Stress and the Own-Race Bias on Eyewitness Identification Accuracy (*Oral Presentation)*
Bartosh, Madeline, Psychology
Faculty Research Mentor: Andrew Terranova, Psychology
The accuracy of eyewitness identification has been a topic of study in order to understand how different factors can increase or decrease the reliability of eyewitness memory. The confidence of witnesses is commonly used by judges and jurors in court to determine their identification's accuracy and reliability (Cutler et al., 1990), but certain factors can decrease accuracy, including stress (Pezdek et al., 2021) and the own-race bias—the idea that people are better at identifying individuals of the same race than across races—(Brigham et al., 1982; Wright et al., 2001; Pezdek et al., 2012; Vitrol et al., 2019), regardless of confidence. Also, confidence may be inflated by the procedures used to present lineups to witnesses, like giving confirming feedback after an identification is made (Wells & Bradfield, 1998). This study will examine how stress and the own-race bias affect identification accuracy in college students, as well as how these factors interact with the confidence-accuracy relationship, in a 2-race condition (same-race vs. cross-race) x 2 stress induction (stress vs. no stress) between-participants experimental design.

Language Objectives for (English) Language Learners (*Poster Session)*
Batt, Jessica, Batt, Special Education
Faculty Research Mentor: Rhonda Miller, Special Education
The purpose of this study is to evaluate the quality of language objectives written by various types of teachers for (English) language learners. This research study examines language objectives in lesson planning for (English) Language Learners. Participants are a small group of six graduate students enrolled in an ESOL methods course. Data was collected from written assignments that were already part of this online course: application activities and lesson plans. Language objectives were analyzed and categorized as being focused on reading, writing, speaking, and/or listening. Study results and implications of the study will be presented.

Group Theory Structures in Bobbin Lace *(Oral Presentation)*
Beam, Riley, Applied Mathematics
Faculty Research Mentor: Thomas Hoffman, Mathematics & Statistics
Bobbin lace is a complex textile art that intricately weaves dozens of threads into a single piece. Upon examination, it becomes apparent why bobbin lace is able to be so elaborate while remaining structurally sound. This talk will discuss the group theory structures in bobbin lace by abstracting the textile to build a mathematical model as well as applications in pattern making through enumeration.

South Germany: Integrating German Speakers into Latin American Societies (Poster Session)
Bellos, Logan, Languages and Intercultural Studies

Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
Argentina and Chile have always been known to be predominantly Spanish speaking countries. However, following the conclusions of both World Wars, an interesting trend in immigration has led to both countries developing a surprisingly large German population. The majority of German immigrants consisted of three groups: ethnic Germans escaping the economic hardships of the First World War, German Jews pre- World War Two, and Nazi Sympathizers fleeing the country post World War Two. While some groups of Germans have successfully assimilated into the Hispanic cultures of both Argentina and Chile respectively, other groups of Germans have developed outlying colonies, distancing themselves from the culture of their host nations. Due to the nature of these secluded colonies, has led to in some extreme cases, such as unchecked cult-like behavior. This poster explores how the governments of Argentina and Chile decided to interact with these German colonies and how the situation is today. This will provide evidence as to if anything can be done in the future to integrate these German-speaking societies into the cultures of their host nations.

Hispanic Population at Coastal Carolina University: An Analysis of Challenges and Adversity in Higher Education *(Poster Session)*
Bermejo, Valentina, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
This research pursues the analysis of the Hispanic Population at Coastal Carolina University. It seeks to explain the factors that shaped their journey to secondary education whether it be through intrinsic motivation or generational guilt; while also seeking to understand the hardships that come with being the first generational student to attend an American University. Through previously conducted research by scholars such as Consuelo Arbona, Amaury Nora, Laura Perna, and Claudia Kouyoumdjian, along with a series of interviews amongst self-identifying Hispanic university-goers at Coastal Carolina; the study comes to find the disparities amongst the previously grouped category of "Hispanics at Coastal" based on upbringing, parent/guardian's highest level of education and other crucial demographics that make or break the rationale behind university attendance and overall experience. It is essential to highlight the adversity that must be overcome in the pursuit of white-collar positions, the socioeconomic advancement of an ethnic category, and expose the resources currently being offered to these groups for better or worse.

Seasonal length-Biomass Relationships for Juvenile Spot *(Leiostomus xanthurus)* (*Oral Presentation*)
Berrocal, Jacob, Marine Science
Faculty Research Mentor: Juliana Harding, Marine Science
Intertidal estuaries are key nursery habitats for juvenile marine fish species. Post-larval spot (*Leiostomus xanthurus*) enter southeastern estuaries during late winter/early spring months as light and temperature are increasing. Juvenile spot have high fidelity for specific intertidal creek pools that provide protection from predators and access to food. Spot annual growth rates have been determined using length-frequencies but rarely have cohorts within the same year been analyzed for differences. Spot seasonal trends in standard length (mm), biomass (g dry tissue), and growth rates (mm/day) were quantified in Crabhaul Creek, North Inlet estuary, SC in relation to water temperature in 2021. Spot were collected approximately bi-weekly from January 2021 to December 2021 using seines or cast nets. Standard length (mm), total length (mm), and biomass (g dry weight) were measured for at least 20 individuals from each collection. Fish standard length demographics were evaluated using FiSAT II to determine the cohorts and an ANCOVA was used to determine differences in length-based growth rates

between cohorts. Crabhaul Creek water temperature and salinity during 2021 ranged from 6 –35 oC and 5- 37 ppt, respectively. Spot standard lengths were 19 – 102 mm with corresponding biomass from 0.013 - 3.135 g. The results document seasonal trends in juvenile spot habitat use related to water temperature including when spot change from isometric to allometric growth. This could help us understand young of the year survival rates, as well as possible management strategies for related fisheries.

Electromyographical Difference between Tonal and Free Weight Exercises (*Poster Session)*
Brettler, Sophia, Exercise and Sport Science
Faculty Research Mentor: Jakob Lauver, Kinesiology
The purpose of this study is to compare muscle activation between Tonal and traditional free-weight exercises. The Tonal is a digital weight system that can add up to 200 pounds of resistance. The Tonal also features unique exercise modes such as Smart Flex. Smart Flex utilizes Tonal's digital weights system to intelligently match the resistance to the exerciser by continuously adding or subtracting weight depending on when their muscles are at their strongest and weakest during an exercise. For this study, participants will complete 3 separate visits, visit one will include one repetition maximum testing and familiarization and visits 2-3 will include exercising with Tonal and free weights. During visits 2-3, participants will perform three separate exercises targeting the biceps, triceps, and anterior and medial deltoids. They will be hooked up to electromyography (EMG) to monitor muscle activation while performing bicep curls, skull crushers, and standing overhead shoulder presses. All exercises will be performed at 65% of each participant's maximum and five minutes of rest will be provided between each exercise. The expected outcome of this study is that Tonal will result in greater muscle activation due to its unique feature of Smart Flex, which would have important implications for training.

Eating Disorders, Depression, and Anxiety: A Multivariate Survey of College Students (*Poster Session)*
Bretton, Adam Bretton, Psychology
Faculty Research Mentor:
Mental illness is America's leading cause of disability (Rehm & Shield, 2019). Of particular concern is the finding that more than 60% of college students meet the criteria for one or more mental illnesses, an increase of nearly 50% from 2013 (Lipson et al., 2022). Young adults, particularly young women, are vulnerable to anxiety, depression, and eating disorders [ED(s)] (De Young, 2017). Given the high incidence of depression, anxiety, EDs, their comorbidities, and their profound effect, their correlation must be thoroughly investigated, especially in a highly susceptible college-aged population (Sander et al., 2021). This study examines the relationship between anxiety, depression, and EDs in a college-aged population while considering transdiagnostic variables. Participants (n=998) were mostly female (65.1%), 20-29 (56.7%), and white (79.4%). 38% were at a high-risk for an ED, and 18.1% screened positive for at least one ED. ED-positive participants reported significantly higher scores for anxiety (ED: $M = 11.56$, $SD = 6.02$; NKR: $M = 7.01$, $SD = 5.66$, $p < .0001$), depression (ED: $M = 12.03$, $SD = 6.74$; NKR: $M = 6.47$, $SD = 5.55$, $p < .0001$) than those with no known risk [NKR]. Women were 4.06x more likely to screen positive for EDs and also had higher anxiety and depression scores (GAD7: $M=9.52$, $p<.0001$, PHQ9: $M=9.15$) than males (GAD7: $M=6.20$, $p<.0001$, PHQ9: $M=5.90$). Participants who screened positive for an ED reported lower scores for family (ED: $M = 5.04$, $SD = 1.79$; NKR: $M = 5.69$, $SD = 1.53$, $p < .0001$) and total perceived social support (ED: $M = 5.31$, $SD = 1.32$; NKR: $M = 5.53$, $SD = 1.32$, $p < .05$).

Personality and Physiological Correlates of Aggression (*Poster Session*)
Bretton, Adam, Psychology, Yeva Mkhoyan and Dakota Barnes, Exercise and Sports Science

Faculty Research Mentor: Melissa Paiva-Salisbury, Psychology

Psychopathy refers to the neuropsychiatric condition characterized by a lack of emotional reaction and empathy as well as improper conduct, which can often lead to persistent antisocial behaviors, and even criminal activities (Cleckley, 1941/1988). Psychopathy includes two subtypes: primary and secondary psychopathy. While primary psychopathy encompasses more traditional notions of psychopathy (Kimonis, et. al, 2012), secondary psychopathy can be exhibited by callous and emotional traits (Gill & Stickle, 2016). Contemporary intervention practices for individuals presenting psychopathic traits have not accounted for anxiety, despite recent research demonstrating notable differences in primary and secondary psychopathic traits (Paiva-Salisbury, 2017). Utilizing a quasi-experimental design involving 200 Coastal Carolina University undergraduates recruited through different means, students answered numerous questionnaires while an electrocardiogram monitored their biophysical responses. The goal of this study was to look at the complicated multidimensional relationship between psychopathy and anxiety, aggression, heart rate variability, and other traits of psychopathy (Pilkonis and Klein, 1997). Individuals with high psychopathic traits but low anxiety (the primary psychopathic trait group) were expected to have a lower resting heart rate than those with high psychopathic traits and anxiety (the secondary psychopathic trait group). Furthermore, we suspected both primary and secondary psychopathic trait groups will presumably report higher levels of anger than those with low psychopathic traits. Results will follow.

Developing Narrative Content for the Virtual Shikoku Pilgrimage Immersive Platform *(Poster Session)*

Brick, Theresa, Anthropology and Geography

Faculty Research Mentor: Susan Bergeron, Anthropology and Geography

The Virtual Shikoku Pilgrimage project is a multidisciplinary digital virtual heritage project to replicate the experience of the 88-temple Shingon Buddhist pilgrimage around the island of Shikoku. The project also aims to teach users about the Shikoku pilgrimage, including its historical, cultural, and spiritual significance. Utilizing the Unity 3D engine for 3D immersive virtual applications, this project is centered on developing an immersive videogame-style platform where users can navigate a recreated digital version of the pilgrimage temples and journey using a third-person perspective. Within these virtual landscapes, embedded multimedia popups (such as text, photos, and video) provide users with information about the temples and viewpoints of different pilgrims (henro). Additional information may be provided about the general history of the pilgrimage and the area.

This poster discusses the process of background research and literature review for developing the narrative content for Temple 1 of the Shikoku pilgrimage, including multimedia and a script for the narrative story stops located at various points throughout the virtual recreation. In addition, this portion of the project also included design work on the user experience and user interface (UX/UI) of the Virtual Shikoku Pilgrimage platform. This includes navigation aids and menus to guide users through the virtual landscape.

"Get ready, Ladies": A Content Analysis on Women's Representation in Superhero Films *(Oral Presentation)*

Brown, Dyneira, Communications, Media and Culture

Faculty Research Mentor: Corinne Dalelio, Communications, Media and Culture

Superhero and villain films are one of the most popular genres known to modern-day society. Viewers are intrigued by the way characters are portrayed through their dialogue, costumes, and surrounding effects. This study will take a deeper look into the representation of women in superhero films and compare its findings to traditional gender stereotypes. A content analysis will be conducted over a few

films from the DC Universe including Suicide Squad, Birds of Prey, and Suicide Squad 2. The films were chosen to focus on their female characters and how they are portrayed through their appearances, dialogue, screen time, and more. The study will also incorporate several other factors to support its findings including the Feminist Film theory, Objectification Theory, Social Cognitive Theory, and the male gaze.

Effect of A Serine Protease on Neurodegeneration Using Alzheimer's Fly model (*Poster Session)*
Brown, Mallorie, Biochemistry, Elizabeth McCrea, Biology and Hannah McCutcheon, Biology
Faculty Research Mentor:
Alzheimer's is a disease that leads to memory impairment and eventually the inability to carry-out daily tasks. Drosophila melanogaster, or fruit flies, are used in this study as their genome is 60% homologous to that of humans, and about 75% of the genes responsible for human genes have homologs in flies. This allows fruit flies to be eligible in the study of complex pathways relevant in biomedical research. This study utilized Amyloid-β peptides which are the makeup of plaques that clump between neurons and disrupt cell signaling. The peptides form from a cleavage of larger peptides, human Amyloid-β peptide 42 (Aβ 42), which were produced in transgenic flies. This study analyzed the phenotypes of transgenic Drosophila model of amyloid β (Aβ) toxicity. This was tested through trials of climbing assays of the flies. Our preliminary data showed that knockdown of a serine protease rescued the behavioral phenotype. In addition, the morphology of the Alzheimer's fly brains was documented using histological techniques to assess degree of neurodegeneration.

Ocean Wave Optimization using In-situ Buoy Measurements (*Oral Presentation*)
Bruno, Madison, Marine Science
Faculty Research Mentor: Erin Hackett, Marine Science
Ocean-atmosphere interactions are highly dynamic and are largely related to prevailing wind and wave conditions. Accurate modeling of waves in various types of physical models affected by the near-surface region is paramount – such as in numerical weather prediction models, electromagnetic wave (EM) propagation simulations, and climatological models. For example, EM propagation is greatly influenced by forward scattering from the sea surface, thus high-fidelity wave models are commonly used to represent the sea surface. Because measured wave fields can be more complex than their model representation, and high-fidelity simulations often require more information (higher resolution) than buoy measurements can provide, it is not straightforward to use these wave models to replicate wave fields measured by wave buoys.
In this study, in-situ buoy data are optimized to a wave model that includes both the wind and capillary wave portion of the wave spectrum, and swell are modeled using a narrow band swell spectral model. Optimization of the in-situ data to the model is performed using particle swarm optimization (PSO), a machine learning technique. The buoy data were collected during the Coupled Air-Sea Processes and Electromagnetic Ducting Research East field campaign in Duck, NC. PSO iteratively estimates parameters of the wave model until the model optimally matches the in-situ (buoy) data. Optimized models are visually compared to the corresponding buoy data as well as quantitatively compared. The results demonstrate how buoy data can be used to optimize a wave model to improve simulations that include a sea surface.

The City of Conway: Historical Homes and Cultural Identity *(Oral Presentation)*
Butler, Sean, History

Faculty Research Mentor: Aneilya Barnes, History

This research illustrates why the historical homes of Conway are an important point of cultural identity within the wider historical heritage of the City of Conway. Current historiography on the City of Conway focuses primarily on the political, agricultural, and religious roots and their influences on the city's development. Within this same historiography, there is a focus on Conway's structural history including, farms, schools, and businesses attributing these structures to the core of Conway's culture. However, there is a significant lack of attention given to the historic homes of Conway and their important cultural value for the city and community. In recognition of that, this research will first analyze the homes' significant architectural features and how these features contribute to the consolidation of cultural identity for Conway. Second, it will examine the importance these sites have as cultural landmarks contributing to the growth and development of both the city and the community. Lastly, it will trace the personal stories most attributed to these historical homes to better explain how impactful these places are to the ever-expanding cultural legacy of Conway, South Carolina. The evidence gathered on these historical homes is primarily through the collection of written archival evidence, visual observation, and oral communications with various community partners. In short, the overall history of Conway mostly resides in the crevices of the wider state history tied to places like Charleston, Georgetown, or Myrtle Beach, making this topic important to the understanding of not just local history but the larger statewide history as well.

Emotional Intelligence, Empathy, Political Beliefs, and Educational Background *(Oral Presentation)*

Butler, Tracey, Psychology

Faculty Research Mentor: Andrew Terranova, Psychology

Emotional intelligence identifies four interrelated emotional abilities, including perception, use, understanding, and management of emotion. The Social and Emotional Learning framework is the process to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintaining supportive relationships, and make responsible and caring decisions. Only 27 of the 50 states have adopted parts of the social and emotional learning framework in K-12 instruction. The present study will examine if college students educated in states that have adopted the SEL framework as part of their K-12 education curriculum report higher levels of cognitive and affective empathy and emotional intelligence. Given the adoption of the SEL curriculum seems tied to the political leanings of states, how participants' political ideologies relate to the location of upbringing, empathy, and emotional intelligence will also be explored.

South Michigan Food Bank Food Insecurity Dashboard (*Poster Session*)

Cannon, Mackenzie, Health Administration

Faculty Research Mentor: Stephen Borders, Health Administration

Food insecurity is a multidimensional problem. This research project aims to use geographic information systems to reduce food insecurity in the eight-county service area by the South Michigan Food Bank. We collected and analyzed data on various factors that contribute to food insecurity: such as poverty, education, employment, transportation barriers, and access to supermarkets and grocery stores. By mapping these data at the census tract level and visualizing the results through an interactive dashboard, we identified areas with the highest levels of need while recognizing some of the root causes behind food insecurity throughout the region. In addition, we created a printable infographic for each of the South Michigan Food Bank's 239 census tracts. The infographic summarizes key statistics related to food insecurity for each tract. The use of geographic information systems, interactive dashboards, and

printable infographics has demonstrated its potential to be a valuable tool in the effort to reduce food insecurity in the region. Printable infographics are ideal when attempting to pinpoint locations with the greatest needs. This data-driven approach and the ability to summarize complex data sets have allowed the South Michigan Food Bank to identify key factors contributing to food insecurity and develop targeted solutions to address the problem at a more localized level.

The Effect of Acute Creatine Supplementation on Non-Invasive Assessment of Vascular Function Using Flow-Mediated Dilation (*Poster Session)*
Carruthers, Carson, Exercise and Sport Science
Faculty Research Mentor: Timothy Rotarius, Kinesiology
Accumulation of reactive oxygen species within the vasculature has been shown to contribute to endothelial cell dysfunction, an early biomarker of cardiovascular disease. Antioxidants and supplements with antioxidative properties, could be increasingly important in reversing the progression of cardiovascular disease. While creatine monohydrate is commonly used as a fitness supplement to promote increases in muscular strength, recent studies have shown that creatine may act as an antioxidant, thereby improving vascular health. Traditional loading doses of creatine require 7-10 days of 20 g (4 x 5 g/day). However, it may be possible to see the vascular health benefits with a smaller, more cost-effective dose. To test this, flow-mediated dilation was performed before and after a one day, twenty-gram dose of creatine monohydrate. Flow-mediated dilation is a method of testing endothelial function, a key component of cardiovascular health, by occluding blood flow using a blood pressure cuff for 5 minutes and measuring the dilation of the brachial artery following the reperfusion of blood. We believe that a one-day, 20 g creatine supplement may be enough to see an improvement in endothelial function as assessed by flow-mediated dilation.

Attenuation of VO2 Slow Component during Heavy-intensity Interval Exercise (*Poster Session)*
Carter, Cade, Exercise and Sport Science
Faculty Research Mentor: Jakob Lauver, Kinesiology
"The VO2 slow component (VO2SC) is a slow, exponential increase in oxygen consumption (VO2) that takes place during constant load exercise above the ventilatory threshold. The purpose of this study was to examine the amplitude of the VO2SC during various heavy-intensity interval exercise conditions. Seven males participated in a total of 7 visits, visit one consisted of a graded exercise test until volitional fatigue, and visits 2-7 consisted of 2 visits each of the 3 experimental conditions. Each experimental trial began with a 4-minute warm-up cycle at 20 watts, followed by the experimental condition, followed by a 4-minute cool-down cycle at 20 watts. The experimental conditions were; continuous (CON) which consisted of a 6-minute cycle at a constant work rate, interval (INT) which consisted of a 3-minute cycle at a constant work rate followed by 3-second rest intervals interspersed every 10 seconds for the remaining 3 minutes of the condition, and interval extended (EXT) which followed the same protocol as INT, however, intervals were continued until the work performed matched CON. The work rates for each experimental condition were set at a work rate corresponding to the VO2 at 50% between VO2peak and ventilatory threshold determined by the graded exercise test for each subject. Findings suggest that the VO2SC was attenuated with the addition of 3-sec recovery intervals during INT and EXT. This is possibly due to CON resulting in higher levels of myocardial work compared to INT and EXT, as shown by heart rate measurements within the trials.

Workforce Housing (*Oral Presentation*)
Charlton, Makehna, Finance
Faculty Research Mentor: Pamela Martin, Political Science
Due to the effect of wages not keeping up with increasing costs of living and limited supply of housing affordable to workers in Georgetown County, workforce housing should be implemented in the area which will create affordable housing to households earning between 60 and 120 percent of area medium income (AMI). This housing system will target medium-income workers including profession such as police officers, firefighters, teachers, health care workers, and retail clerks.

Environmental Bacteriophage Presence in the Drainage Ponds at Coastal Carolina University (*Poste*r *Session*)
Chestnutwood, Alexei, Biochemistry
Faculty Research Mentor: Paul Richardson, Chemistry
The purpose of this research is to detect naturally occurring, lytic bacteriophages and identify the environmental factors that influence their presence on Coastal Carolina University's campus. Bacteriophages are non-living viruses that only infect bacteria, and these viruses are found in abundance in every environment. Likewise, coliphages are viruses that exclusively infect coliform bacteria. Eleven treated and untreated freshwater sample sites were chosen for weekly sampling on CCU's campus. During water sample collection, ambient environmental conditions were measured. In addition, precipitation was tracked over the collection period as runoff relates to the proliferation of bacteriophages. If plaque assays indicated the presence of lytic bacteriophage, then the environmental samples underwent PCR (Polymerase Chain Reaction) identification. Over the collection period, coliphages were detected on CCU's campus and identified based on genomic information. With the collected precipitation data and observed positive results, the correlation between environmental factors and the presence of bacteriophages on campus were determined.

Being A Musician with A Disability Is Okay (*Oral Presentation)*
Chowning, Eden, Music Performance
Faculty Research Mentor: Eric Schultz, Music

In the music industry, mental health is a topic in the forefront, but other disabilities are rarely addressed. This is the case across the board; pop, classical or even jazz musicians. My goal is to spread awareness and talk about this more and that it is okay to be a musician and have a disability. Because the work culture of major label style artistry is so fast paced, such long hours, and it can be demanding physically, mentally, emotionally and so on… if a disability … not even a disability, will push you out of the group. I really just want to raise awareness and teach people about the matter.

Sustainable Business Certifications and a Practical Application *(Oral Presentation*)
Cilino, Katelyn, Sustainability and Coastal Resilience
Faculty Research Mentor: Andrew Busch, Sustainability and Coastal Resilience
Sustainable business certifications fall under various categories including but not limited to food, household and cosmetic products, infrastructure, and energy. This project will discuss the types and qualifications of sustainable business certifications, why businesses are choosing to become certified, and the incentives for business and the consumer. After working with Heritage Landscape Services, a local company in Gilbert, SC has chosen a certification that works best for their business and undergone the process of becoming certified sustainable. Various interviews were conducted with multiple businesses, their current sustainable practices were accessed, and matched to various certifications.

3-D models for (Chemistry) Education (*Poster Session)*
Cole, Elizabeth, Biology
Faculty Research Mentor: Kevin McWilliams, Chemistry
VSPER theory is a difficult concept to understand and a significant area of confusion in general (Chemistry) classrooms. 2-D models are commonly used; however, they fail to take into consideration a molecules orientation in space, a key component in VSPER theory. The lack of clarity involving bond angles and alignment often leads to difficulty in conceptualizing the theory. The purpose of this project was to generate 3-D models of molecules from VSPER theory for classroom use with the intent to aid in the comprehension of the material. Free CAD was the computer software system used to generate a base and build simple molecules. The program, Avogadro, was used by a fellow research student to supply a model for more complex molecules for more advanced (Chemistry) education. The LulzBot TAZ 6 3D Printer was utilized along with materials PVA and PLA. A preliminary focus of the project was generating test models to gain insight on the functionality of software, materials, and the printer itself. Numerous prints were performed with the intent to challenge the printer's precision and fine-tuning settings. Additionally, a user-guide was formatted to provide a manual for future students to maximize the use of 3-D models in the classroom.

Promoting Self-Awareness and Self-Advocacy for Students with Disabilities (*Poster Session)*
Conroy, Caitlin, Special Education
Faculty Research Mentor: Nicole Uphold, Special Education
Using the ME! Lessons for Teaching Self-Awareness & Self-Advocacy (Cantley, Little, & Martin, n.d.) as a guideline, I created "bell ringers" to teach transition age students with disabilities about self-awareness and self-advocacy in rewards to their disability and IEP. I taught these skills to a small group of four students. Every day, these four students met for 10 minutes during the start of the day. The research conducted is self-study research (Hauge, 2021). For all students with disabilities, especially at the transition age, self-awareness and self-advocacy is so important. To be able to continue teaching these lessons after this experience, I reflected on my teaching of these skills, the gathering of materials, how

well the materials encouraged student growth, student involvement, etc. I conducted this research to improve myself as a professional educator. I reflected on the challenges in these lessons and how to work through them.

Embryonic Anoxia Alters Exploratory Behavior in Juvenile Leopard Geckos (*Poster Session*)
Cook, Anna, Psychology
Faculty Research Mentor: Ryan Yoder, Psychology
Environmental changes, such as temporary anoxia, during the embryonic stage can impair brain development in leopard geckos (*Eublepharis macularius*). We therefore tested whether this early brain damage produces persistent behavioral deficits.
The organization and kinematic properties of non-visual exploration between normal (n = 4) and anoxia (n = 5) geckos were compared. Geckos were individually placed on a circular table (diam=91cm) and allowed to explore dark conditions for 60 min while being recorded. The gecko's coordinates were calculated at 3 frames/second. Movement properties within each trial were evaluated across five 10 min epochs.
Total distance, peak speed, movement scaling (correlation between path length and peak speed), distance ratio, heading error, total stop time, mean stop time, number of stops, number of progressions, and progression distance were compared between groups and across epochs with a mixed Group X Epoch ANOVA. We found that total stop time and overall number of stops were significantly lower in anoxia geckos. These results could indicate that brain damage caused by early anoxia causes geckos to be able to process less information, which would lead to less overall stops and decreased stop length. Geckos retain the ability to move normally and accurately estimate distance. Thus, the reduced stops are not caused by a general movement deficit.
These preliminary results suggest that embryonic anoxia persistently alters exploratory behavior. This on-going study will continue to evaluate exploratory movement, and data will be added to the presentation as they become available.

Juggling Shakespeare: A Transnational Performance of Rhythms, Metaphor, and Imagination (Oral Presentation)
Cook, Isaiah, Physical Theatre
Faculty Research mentor: Benjamin Sota, Physical Theatre
This innovative performance merges the art of juggling with the masterful works of William Shakespeare, creating a unique fusion of literary and visual metaphor, images, rhythm, and iambic pentameter. Through its interplay of rhythm, physicality, Shakespeare's text, and dramatic structure, the performance creates a unique and engaging experience for audiences. At the same time, its use of iambic pentameter emphasizes the rhythms that mirror the heartbeat and patterns inherent in juggling and human existence. The visual metaphors, images, and rhythms bring Shakespeare's works to life in a new and dynamic way.
This research aims to answer the following questions:
1. How does the fusion of juggling and Shakespeare's works impact audience engagement and understanding of the performance?
2. What role does the use of iambic pentameter and visual metaphors play in bringing Shakespeare's works to life in a new and dynamic way?
3. How does this transnational performance help to transcend cultural barriers and stimulate audience imagination?

The performance transcends cultural barriers and stimulates imaginations, aiming to engage audiences in (English)-speaking and non-(English)-speaking countries. The performance is set to take place in a variety of settings, including the boardwalk in downtown Myrtle Beach, the Edwards Blackbox theatre, street performance on Kalakaua Blvd in Waikiki, Hawai'i, and Kennedy Theatre at the University of Hawai'i at Manoa, and later in Almaty, Kazakhstan, and Prague, Czech Republic.

Unquestioned: A Half Hour Dance Concert That Explores the Effects of Herd Mentality on Minority Groups and The Environment. (*Oral Presentation)*
Cuozzo, Teryn, Musical Theatre and Dance
Faculty Research Mentor: Ben Sota, Physical Theatre, Adam Pelty, Musical Theatre and Dance
Over the past year, in association with the Edwards Center for Inclusive Excellence, I curated a dance piece that was presented on Feb 3, 2023, titled, Unquestioned; A Half Hour Dance Concert. This piece asked the following questions: What do we believe in without question? Is that right or wrong? Inspired by the ancient works of Plato's Allegory of the Cave, Sophocles' Oedipus Rex, and the motto "blissful ignorance" I studied ways humans willingly submit to a system of ignorance out of fear and love rather than chosen compliance. In looking at the works of female poets, I observed that the things we compliantly believe in either pertained to our patriarchal norms as a community or believing in the natural; the sun rising, the rain falling, the earth spinning around etc. This led me to the following conclusion. Herd mentality negatively affects our environment when powerful people decide what the "convenient" norms are. Similarly, minority groups (in the context of this project, women) are affected very differently by herd mentality than the majority group because it is often more convenient to push these voices aside. The narrator of the story embodies this message by using her femineity and youth to encourage and enlighten the group to view the world in different and unique ways. This project received University grant support and performers were asked to return on February 4 to present the work to the potential incoming students for the theatre department.

Conditioning Pigeons to Switch a Decision-Making Strategy (*Oral Presentation)*
Cutaia, Tyler, Biology
Faculty Research Mentor: Matthew Murphy, Psychology
One central area of psychology is decision-making strategies, such as the win-stay-lose-shift approach. This occurs when an individual is given a choice between two options, and they choose the same option twice if correct or switch if incorrect. This strategy develops across several species that can be used as model organisms for cognitive processes such as pigeons, which show many of the same psychological patterns as humans. The aim of this study is to determine whether pigeons adjust to a win-stay-lose-shift strategy easier after being exposed to a lose-stay-win-shift strategy, or vice versa. Because of an innate response to win-stay-lose-shift, it is hypothesized that the pigeons will have an easier time adjusting to the strategy both initially and after being exposed to lose-stay-win-shift. The results can show how pigeons adapt foraging strategies when changing habitats or allude to changing how humans persist in residing where natural disasters are common.

The North African Move to Italy: How and Why? (Poster Presentation
DAiello, Mary, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltrán de Heredia, Languages and Intercultural Studies
Immigration in Italy dates to the tenth century. From merchants to philosophers, many would travel far and long to create a new name for themselves or to spread their ideas and share items with the new

land. In today's age, immigration is more than sharing ideas and selling things, people migrate to escape war, poverty, or oppression. For the people of northern Africa, many of them flee their home countries in search of a peaceful land, which happens to be the country that is closest to them across the Mediterranean, Italy. In 2014, over 170,000 immigrants arrived in Italy, and over the last few years, that number has increased to over 500,000 total. These people rely on unsafe boats and raft vessels to take them across the Mediterranean in hopes of landing in Italy and escaping their war-ridden countries. Life across the border into Italy may seem peaceful, however many Italians do not take kindly to these immigrants. Surveys have shown that Italians feel that these immigrants are a burden on their country and many immigrants are labeled as criminals simply for not being Italian born. This project will look into the movies Terraferma and Fire at Sea and a TED Talk by Takaua Ben Mohamed called "Liberi di Essere, Liberi di Diventare" to explore how these immigrants and their children live their lives as an outsider and how they cope with the pressures of Italian society.

Let's Get Involved (*Poster Session)*
Daly, Delaney, Special Education
Faculty Research Mentor: Nicole Uphold, Special Education
This study taught student teacher interns on how to support students and parents to participate in Individualized Education Plan (IEP) meetings. While previous research has determined students with disabilities can learn the skills needed to participate in their IEP meetings, researchers suggested that educators need training on how to conduct IEP meetings in which students and parents will be active participants (Chandroo et al., 2018; Sanderson & Goldman, 2021). This study focused on teaching teachers to build relationships with parents and students to create a level of comfortability so that when in an IEP meeting, everyone has a comfortable environment to speak in. It also shows how language influences the level of participation of parents and students in IEP meetings. A curriculum was developed to train the educators how to teach students and parents about the IEP meeting, and how to structure an IEP meeting so students and parents can be active participants. A pretest posttest design was used to measure a change in student teacher interns' knowledge of IEP meetings and student/parent engagement strategies. I will talk about the curriculum, the research design, and future plans to measure if the student teacher interns implemented the strategies learned during their first year of teaching.

Police Departments and Cities Economies
(*Oral Presentation)*
Davis, Clayton, Intelligence and National Security
Faculty Research Mentor: Pamela Martin, Political Science
This study will show how important the presence of law enforcement agencies is for economic development in growing communities. Law enforcement provides a sense of safety for individuals as well as business owners in communities. The safety of a place attracts people as well as business to the area. This study shows how the Georgetown Police Department implements events to improve community trust. This is important for this community given the population growth in and around the coastal areas of South Carolina.

Leipzig Applicator Dose Study Progress and Mesh Computational Phantoms (*Poster Session)*
Davis, Julianna, Engineering

Faculty Research Mentor: Wes Hitt, Physics and Engineering
Leipzig applicators are tools used to administer brachytherapy, which is a treatment for skin cancer that is typically used when it occurs on the face of the patient. This treatment requires the patient to have lead shielding over their eyes to protect the sensitive lenses. This study is in the progress of modeling this scenario in order to determine the radiation dose delivered to the patient's eyes due to the lead shielding. This is being done in a Monte Carlo computational radiation transport program, EGS (Electron Gamma Shower,) which was previously unable to handle mesh computational phantoms. After working with the developers of the program, users are now able to utilize ICRP (International Commission on Radiological Protection) mesh phantoms in order to measure doses delivered to the human body.

Independent Living Outcomes of Young Adults with Intellectual Disabilities through Post Secondary Education (*Poster Session)*
Deal, Hannah, Special Education
Faculty Research Mentor: Cheryl Morgan, LIFE Program
Postsecondary education programs for students with intellectual disabilities are increasing substantially throughout the United States with programs in 49 total states overall. One of the primary pillars of Postsecondary Education for this population of young adults is independent living. Based on the review of literature and specific articles for this research, there are sufficient resources and tools used to measure changes in independent living skills throughout each year in a program. But few of these articles have looked at how specific instruction and experiential learning influence outcome goals. This study will explore student growth in independent living skills through a specifically designed assessment process to measure multiple facets of in-class instruction, hands-on supported experiential learning, and practice of skills in real-life settings such as on-campus apartments. The LIFE Team at Coastal Carolina University have developed an assessment app that can be used by each person who provides instruction and support for LIFE students, in real-time. The use of the assessment in this way allows for timely adjustments to instruction, practice, and support. In this presentation, I will share the findings in my literature review and provide initial assessment and outcome data. Not only did this study give plenty of new insight into what students with disabilities experience and need academically, but it also shined light on what could be improved outside of the academic field as well.

Historical Narratives: American and Japanese Perspectives on Pearl Harbor (Poster Session)
DeCordova, Celina, Communication, Digital Culture and Design, Max Scivetti, History
Faculty Research Mentor: Bridget Nolan
The system of education is shaped by the social location in which it is taught. This broad concept has been made apparent in relation to national collective memories of the 1941 attack on Pearl Harbor, a point of interest for the Center of Inclusive Excellence's (CIE) research trip to Honolulu, Hawaii in the first week of March. During our conversations in the CIE, Pearl Harbor has become a hub of conversation especially for the authors of this poster—a Japanese-born student and an American-born student with family ties to Pearl Harbor. These conversations have led to the realization that our respective educations represent a duality of comprehension. Our poster presentation will ask the question, "How do American and Japanese collective memories differ regarding Pearl Harbor?" Through our research in Hawaii, we plan to unravel the idiosyncrasies of our education based upon the age-old saying that "History is written by the winners." An intensive amount of research must be done in order to decipher the differences and similarities between the academic recollection of World War II enemies regarding an event as instrumental in the modern world as the attack on Pearl Harbor. This research will be

presented in a poster format, which will identify key differences and similarities in the historic recalling of the attack from the perspectives of both American and Japanese students.

Welcome to CCU: Crisis Care University: **A Visceralization of Undergraduates' Mental Healthcare** (*Oral Presentation)*
DeCordova, Celina, Digital Cultural and Design and Gianna Casey, History
Faculty Research Mentor: Matthew Murphy, Psychology
Mental healthcare access is a leading cultural issue that America is facing today, and that is prohibiting the intellectual growth of college students. Through experimental making and critical play, Welcome to Crisis Care University (CCU) focuses on mental healthcare access for American university students. Information gathered via literary reviews, surveys, and student interviews will guide the creation of a visual digital novel. This project will incorporate real-world statistics and circumstances into the story of each of the five characters. Each of the five students will be from different backgrounds, reflective of the demographic backgrounds of undergraduate students at Coastal, and each will have their own difficulty level based upon pre-existing mental health disorders, socio-economic standing, and a variety of other systemic barriers. The demo game will begin at high school graduation, and it continues through each character's first year of college. This visceral narrativization of data is aimed to encourage players to gain a better understanding of what can prohibit college-students from receiving adequate mental healthcare. The players will guide the story of the chosen character, and this choice-based story-line will reflect the burdens endured by CCU and other American university students today.

Systematic Characterization of Mycobacteriophage Gene Function on Bacterial Cell Growth *(Oral Presentation)*
Defreitas, Matthew, Biology
Faculty Research Mentor: Daniel Williams, Biology
Bacteriophages are ubiquitous viruses containing diverse genomes. Many phage genomes have been bioinformatically annotated; however, many genes lack wet-bench functional characterization. Elucidating individual phage gene function on host growth and the phage-host protein interactions causing such phenotypes allows for the exploration of novel antibacterial therapies within the context of phage-host biology. We aim to systematically characterize the genome of the temperate mycobacteriophage Phayonce through the investigation of individual gene expression on host cell growth and the phage-host protein interactions underscoring their cytotoxicity. A library of inducible expression vectors was generated containing each of Phayonce's 77 genes. Individual plasmids were transformed into the host cell *Mycobacterium smegmatis*. When induced on selective media, the resulting host colony phenotype was observed, with 29 genes exhibiting cytotoxic activity. Of these genes, genes 41 and 64, which lack a characterized function, showed near-total inhibition of colony formation. To identify host proteins interacting with these genes, we performed a bacterial two-hybrid screen and isolated numerous host protein fragments of possible interaction partners. Overall, Phayonce encodes numerous, poorly characterized cytotoxic genes. Given their effect on host colony formation, these genes represent a reservoir of potential candidates to be exploited in antibacterial therapeutic development. Since novel genes 41 and 64 exhibit extreme cytotoxicity, they represent prime examples of genes that can be utilized as such. Isolated phage-host protein interaction candidates will be verified and subsequently sequenced to identify the host interaction partners mediating the cytotoxic phenotype. Once identified, these interaction partners can also be exploited in antibacterial therapeutics.

Floating Anthropogenic Debris in Estuarine Systems (*Poster Session)*
Dellinger, Georgia, Marine Science
Faculty Research Mentor: Till Hanebuth, Marine Science
Floating anthropogenic debris (FAD) accumulation is a growing but understudied environmental issue within estuarine ecosystems. Assumedly, estuaries do not only act as a major FAD sink, but storm and flooding events might lead to major FAD remobilization, relocation, concentration, and export.
This project aims at gathering insight on the dynamics of FAD distribution in an SC estuary (Little River/Waties Island) as the result of a storm surge event (Hurricane Ian in September 2022). The dynamics of interest include: logged surge level and dynamics; pre-event distribution of FAD, post-event FAD accumulation pattern; duration and conditions necessary to newly accumulate FAD at pre-event locations. We installed a 15-min interval water logger and monitored the FAD dynamics before and after Hurricane Ian.
While FAD was found in high concentrations together with large amounts of marsh grass debris at the high-water lines at all monitoring sites, the up to 8-ft high hurricane-related surge led to two unexpected effects: a) Major amounts of positively buoyant FAD of any size were lifted up, depleting the loading of the marsh over the whole estuary, and concentrated the material solely within a well-confined surge debris line; b) Larger amounts of cm-sized negatively buoyant FAD appeared within the swash zone of the jetty beach as a kind of bottom boundary layer in rich association with plant litter. The resulting questions about the long-term fate of the light FAD dumped at the debris surge line as well as origin and fate of the bottom FAD are in the focus now.

Investigating Public Transportation Solutions at Coastal Carolina University (*Oral Presentation)*
Denny-Lybbert, Connor, Political Science
Faculty Research Mentor: Michael Promisel, Political Science
With the rise of out-of-state students and the reduced cost of parking passes for freshmen, cars have become something convenient for many students to bring with them to Coastal Carolina University. This rise in car usage has led to a lack of parking available on campus, and many students disapprove of the current parking situation. Coastal Carolina has focused on creating a “walking campus” and the university also places great importance on environmental sustainability. This focus on sustainability, along with the fact that automobiles are one of the greatest polluters, means that any solution to this crisis should first focus on reducing the need for students to use cars. This research will investigate what ways the parking situation can be improved, primarily through public transportation solutions. I will focus on the availability, cost, and convenience of parking and public transportation. I will include interviews of college students and university staff to assess their opinions on parking and public transportation at Coastal Carolina and see what solutions they desire. I will also look at the location of the university, key stakeholders, and other outside influences that affect why transportation at the university relies so much on cars. The results of the research will be used to identify potential areas for improvement that balance both student and university needs.

Genome Annotation of phages Phayeta and Greco Etereo (*Poster Session*)
Earley, Warren, Biology
Faculty Research Mentor: Daniel Williams, Biology
Phages are viruses that infect specific bacterial cells in order to reproduce. Many of these phages can infect and kill medically relevant bacterial species. As part of SEA-PHAGES, Coastal students have discovered two phages, Phayeta and Greco Etereo, which infect Mycobacterium smegmatis, which is closely related to the causative agent of tuberculosis. For our purposes we are annotating the phages

Phayeta and Greco Etereo and comparing them to other previously annotated phages to help determine the function of the genes they contain. By doing this comparative analysis, we are increasing the understanding of phage biology and the roles of individual genes, while observing genome evolution in action. Expanding the knowledge of phage biology is critical for understanding unique biological mechanisms and how they can be medically utilized. Additionally, we may be able to discover the use of specific phages in their employment in therapeutic methods.

Chinese Foreign Influence Activities (*Oral Presentation*)
Flick, Hannah, intelligence and National Security
Faculty Research Mentor: Joseph Fitsanakis, Intelligence and National Security
Arguably the most strategically important country in the Pacific Island Countries is Taiwan. Part of the 'Chinese Dream' is taking back Taiwan by 2049; peaceful ethnic reunification under a One China Policy, world hegemony, and top global military strength.
A key part of the People's Republic of China (PRC) is the United Front Work Department (UFWD) of the Central Committee of the Chinese Communist Party (CCP). The UFWD focuses its work on entities, such as ethnic Chinese people or groups that are outside the CCP, especially those in countries of interest like the United States and more recently, Taiwan. This agency is responsible for coordinating influence operations, such as Confucius Institutes across the world, real estate cooperation in the Pacific Islands, and communal political action groups abroad that are funded by the CCP.
Alongside the UFWD is the Belt and Road Initiative (BRI), implemented as part of the 'Chinese Dream' by President Xi Jinping in 2013. The BRI is a means of providing loans, Chinese companies, and Chinese individuals to countries that accept the BRI and its infrastructure projects that are said to help boost the growth of countries' economies.
The countries where China displays interest are usually fertile regions for Chinese expansion that seek economy-boosting projects and inadvertently contribute to resetting the world order in China's favor. These are all important activities to counter the power and capabilities of the United States and boost global dependence on the PRC.

Identification of a Small Regulatory RNA UspS Associated with the Universal Stress Protein in Lactobacillus Species (*Poster Session*)
Fowler, Zarah, Biology
Faculty Research Mentor: Brian Lee, Chemistry
The gut microbiome is a complex habitat with many bacterial species. These bacteria play vital roles in regulating several physiological processes in the body. With a rise in the use of probiotics to combat human disease, it is important to understand the mechanisms by which probiotic bacteria regulate host interactions. Our exploration of the physiological functions of probiotic bacteria hopes to elucidate the role of small regulatory RNAs or non-coding RNAs in regulating gene expression within the human body. The goal of this project was to identify and explore the conservation of function and structure of the sRNA, UspS, in two probiotic bacteria and to further analyze its role in host interactions. A candidate sRNA in lactobacilli was chosen based on its association with a downstream universal stress protein and conservation among other lactobacilli. The sequence of two bacterial species were characterized using computational methods to predict secondary structure, tertiary structure, and mRNA interactions of UspS. Genes for UspS were isolated from two lactobacilli, and target sRNAs were synthesized by in vitro transcription using a T7 RNA polymerase. Sequence alignment, secondary, and tertiary structure predictions show conserved pseudoknot region of the P4 region of UspS that may correspond to 6S RNA

found in E. coli. 6S RNA is a non-coding RNA that regulates the expression of the sigma subunit of RNA polymerase under stress-related conditions. A thermal melt assay confirmed the presence of secondary structure. Future work will be focused on the role of UspS in regulating the expression of the downstream universal stress protein.

Developing a Safe and Effective Papillomavirus Screen to be used on College Students (*Poster Session)*
Frantz, Nicole, Biochemistry
Faculty Research Mentor: Paul Richardson, Chemistry
Human papillomavirus (HPV) is the most common sexually transmitted infection that accounts for approximately 5% of all cancers worldwide and affects more than 80 million people in the US alone, according to the CDC and National Cancer Institute. Human papillomaviruses are small, nonenveloped, icosahedral DNA viruses that infect squamous epithelial cells. The viral particles consist of a single double stranded DNA molecule bound to histones and contained within a protein capsid composed of structural proteins late (L)1 and L2. To date, over 100 different genotypes of HPV have been identified, and approximately 15 types are considered oncogenic in cervical, vulvar, vaginal, anal, penile squamous epithelia, and more recently, in head and neck squamous cells. This study aimed to develop an experimental methodology that will allow for the safe and effectual detection of HPV among members of Coastal Carolina University (CCU), Conway, South Carolina. Genomic isolation techniques were developed for the purpose of generating inactive noninfectious viral particles, while preserving its genomic fingerprint for future characterization. Bacteriophage T4 are highly robust viral particles that are found naturally in the external environment, serving as a model virus for the initial establishment of safe and effectual isolation techniques. Consensus primers were identified for a PCR-based HPV detection assay, targeting the conserved L1 and E6/E7 ORF regions of the HPV genome. The developed methodology provided effective and reproducible viral characterization, enabling the future applications of these techniques to be applied for the detection of HPV amongst members of the Coastal Carolina community.

Specifying an Identified Lncrnas Modulation in Cellular Processes during Early Embryonic Development of Nicotiana Tabacum Seedlings (Poster Session)
Foust, Elena, Biology and Garrett, Heather, Biology
Faculty Research Mentor: Michelle Barthet, Biology
Multiple forms of RNA exist in cells. The most common forms of RNA include tRNA, rRNA, and mRNA. LncRNAs are proposed to have multiple functions during seed development including gene silencing, organogenesis, and other molecular processes. LncRNAs are unknown or poorly understood because their importance has been questioned throughout early research. However, the lncRNA NTAB_LNC014148.1 is presumed to function in seed development of Nicotiana tabacum based on global gene expression studies. Bioinformatics analyses predicted that lncRNA NTAB_LNC014148.1 binds to at least two gene regions during embryonic development (gene regions Nitab4.5_0001672g0150.1 and Nitab4.5_0001972g0020.1). These two gene regions encode an Arf GTPase activating protein and oxidoreductase. ADP-ribosylation factor (Arf) is a type of small GTPase that acts as a carrier for vesicles during active transport and transports respective proteins through the Golgi complex. NADPH oxidoreductases are involved in the conduction of electron flow and generation, or prevention of reactive oxygen species (ROS) involved in cell signaling, cell death, and other aspects of cell development. Both the Arf GTPase and NADPH oxidoreductase are crucial proteins for seed germination. However, the exact role of lncRNA NTAB_LNC014148.1 in seed development is unknown.

We aim to discern specifically where and when lncRNA NTAB_LNC014148.1 is expressed in N. tabacum seeds using RT-PCR as a first step in the characterization of this particular lncRNA. DNA: RNA interaction assays will be utilized to confirm interaction among lncRNA and predicted gene regions to further characterize lncRNA cellular function.

Friedel-Crafts Reactions to Construct the Core of Flinderole C (*Poster Session*)
Gentile, Christina, Biochemistry and Sadie Disselkoen, Chemistry
Faculty Research Mentor: Bryan Wakefield, Chemistry
Flinderoles C, isolated from plants of the Flindersia genus, is a new class of antimalarial bisindole alkaloids that have antimalarial activity. Indoles and indole-containing compounds such as flinderoles A-C are important components of natural products and the pharmaceutical industry. Flinderole C is reported to be the most active, thus its synthesis is being explored in the laboratory. The purpose of these laboratory experiments is to make progress toward efficiently synthesizing flinderole C. The 1,2-pyrroloindole is a key structural component of these molecules that have been successfully synthesized by our group. Our previous approach revolved around a cross-metathesis to produce an indole tethered to an allylic alcohol. In the lab, BF3•OEt2 and diphenyl phosphate-catalyzed Friedel-Crafts reactions have been shown to give access to the central ring system found in the flinderoles. These reactions have proven difficult to optimize in part due to low yielding synthesis of the allylic alcohol. We hope that the new route to the necessary alcohol will provide access to larger quantities of the cyclization precursor to allow us to find the optimal conditions for the Friedel-Crafts transformation.

Social, Linguistic, and Religious Challenges among Muslim Converts in Contemporary Spain *(Poster Session)*
Deena Othman, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltran De Heredia, Languages and Intercultural Studies
The presence of Muslims in Spain dates back to 711 AD when Muslim forces invaded the Iberian Peninsula. Islamic communities began to grow and deepen their religious roots in Spain while converts and immigrants increased. This was known to be Islamic Spain. A thousand years later, conversions and immigrations are still continuing in Spain while the other majority of religions such as Catholicism and Christianity remain. With this also came Islamaphobic hate crimes against Muslims. Around 2 million Muslims reside in Spain today; half of them do not have Spanish citizenship, making them vulnerable to the majority. Inside Mosques, walls were flooded with messages like “Stop the invasion” and “No to Islam”. This is an ongoing threat to Muslim converts and immigrants. Discrimination in Contemporary Spain increases for many reasons, including today's media and fake news. This research will highlight the social, linguistic, and religious challenges Muslim converts face in Contemporary Spain. By studying media outlets such as the news, social and the web, this research will show the effect these media outlets have on these specific challenges among Muslim converts.
Anxiety, Depression, and Social Media Usage by Gender and Race in a College-Age Population *(Oral Presentation)*

Ghering, Trinity, Biochemistry and McKinley Chapman, Exercise and Sports Science
Faculty Research Mentor: Sharon Thompson, Swain Scholars, Health Sciences
Most mental health disorders develop during young adulthood, with first onset by the age of 25. For college students, anxiety disorders and depression are the most prevalent. As social media continues to

become increasingly popular in the younger generation, it is important to examine how it affects mental health. The purpose of this research is to examine the relationship between anxiety, depression, and social media usage by race and gender in a college-age population. A survey was created and distributed which included Generalized Anxiety Disorder assessment [GAD-7], Patient Health Questionnaire-9 [PHQ-9], and social media usage. ANOVA, Fisher's Exact tests, and Pearson correlation coefficients were used to analyze the data. Participants (N=897) were mostly female (66%, N=592) and were examined by race (Black-15.61%; White-84.39%). GAD-7 scores were significantly higher by race (Whites: M=8.09; Blacks: M=6.64, p<.01) and gender (Females: M=8.96; Males: M=5.78, p<.0001). For PHQ-9, females had significantly higher scores (M=8.82) than males (M=5.68, p<.0001). Social media use was significantly higher by race (Whites: M=12.71; Blacks: M = 11.51, p<.01) and gender (Females: M=14.15: Males: M=10.85, p<.0001). For all participants, PHQ-9 and GAD-7 scores had a strong positive correlation, r(972) =.81, p<.0001. Social media usage and GAD-7 scores r(995) =.36, p<.0001) and PHQ-9 scores and social media usage r(968),=.36, p<.0001) were moderately positively correlated. In summary, significant relationships were found by gender and race in rates of anxiety, depression, and social media usage in this college-age population. These findings indicate a need to increase education and advocacy efforts on college campuses.

Case study: Investigation into the Ownership of Fragonard's *Blind Man's Buff* (1750-1752) (*Oral Presentation*)

Ghering, Trinity, Biochemistry

Faculty Research Mentor: Stephanie Miller, Art History

During World War II, Nazis stole 60,000 pieces of Jewish-owned cultural valuables from French collections. German leaders were fascinated with art and saw it as a vehicle to bolster their status and power. Art was specifically stolen on behalf of Adolf Hitler, who intended to build his own museum: the Fuhrermuseum. One of the most influential families in France at that time was the Rothschild family. During World War II, the Jewish family was forced to flee their home while over 3,500 pieces of artwork from the Rothschild collection were stolen. Most were never recovered. I suspect that Jean Honoré Fragonard's Blind Man's Buff is one of them. The archives from the Jeu de Paume identify many Fragonard paintings, once owned by the Rothschilds, which were seized by the Einsatzstab Reichsleiter Rosenberg (ERR) Nazi agency.

The provenance of Fragonard's *Blind Man's Buff*, now owned by the Toledo Museum of Art, has missing dates and gaps in its timeline, specifically during the seizure of the Rothschilds' collections. Evidence indicates the painting was owned by the Rothschild family, at the very latest by 1915. Its next appearance is in New York in 1954, where it is sold and donated to the Toledo Museum.

Although Toledo's *Blind Man's Buff* is not mentioned in the Jeu de Paume records, the question of the provenance still exists. Where was the Toledo painting during this time and how did it get to New York? Due diligence is required of art dealers, collectors, and museums to investigate the provenance and provide answers. This case study intends to trace the history and location of *Blind Man's Buff* and decipher who really has the claim to its ownership.

Do Attitudes toward Police Mediate the Relationship between Judgment Response Times and Judgments of Police Use of Force? (*Poster Session)*

Goldman, Kali, Psychology and Alex Fusee, Psychology

Faculty Research Mentor: Melissa Baker, Psychology

In the current study we examined how people's attitudes toward police might mediate the relationship between the length of time it takes people to make judgments of an officer's use of excessive force and their actual judgments of the officer's use of force. Research on dual-processing theories of decision-making suggests that people might rely on their attitudes toward police when making determinations of police officer behavior (Bornstein & Greene, 2011; Yeong, 1999). Based on this research, we believe that people likely use their attitudes toward police when engaging in the judgment formation process and deciding whether an officer used excessive force or not. In our study, participants were asked various questions regarding their attitudes toward police (e.g., Agree or disagree: I think police are underappreciated; I think police receive special treatment, etc.). Next, participants read a vignette of a criminal trial describing a police officer who was charged with violating a citizen's right by using excessive force against him; a similar procedure used in previous studies (Ewanation et al., 2022). Next, participants were shown video footage evidence showing the confrontation between the charged officer and the involved civilian. Last, participants were asked whether they believe the officer used excessive force against the civilian. Data-collection is on-going; however, preliminary results suggest that the relationship between participants' judgments of police use of force and the amount of time it takes participants to make their judgments might be mediated by participants' attitudes toward police.

The Importance of Processing and Understanding Bacteriophages (*Poster Session*)

Greco, Alexandra, Emily Bishop, Emma Hofseth, Biology and Kelsi Phelps, Marine Science

Faculty Research Mentor: Daniel Williams, Biology

There are many bacteria that are increasingly becoming antibiotic resistant resulting in a new prevalent medical issue. Bacteriophages are evolutionary virus weapons that infect and fight against these infectious bacteria that give rise to Bacteriophages the most abundant biological entity found in nature, outnumbering all life combined, with a total estimated population of 1031. As part of BIOL 302L - Phage Discovery, we focused on identifying phages from individually collected soil samples found regionally in South Carolina. Through a series of experiments, we were able to identify and amplify two newly discovered phages that infect Mycobacterium Smegmatis following the protocols on the Actinobacteriophage Database: phage Phayeta and phage GrecoEtereo. As we discovered our phages, we are currently coding our sequences through bioinformatic techniques and platforms. We work extensively to try and translate every single gene that is coded through the Phage Database, GeneMark, DNA master, and Phamerator. All these platforms are essential to understand what we are looking at, and how to identify the genes and their purpose. It is our mission to understand the genetic purpose of our phage, and how this phage can be useful in implementing it within modern medicine fields or phage therapy treatments.

The Exploitation of Sarah Baartman's Body (*Poster Session*)

Hagood, Tiquasha, Graphic Design

Faculty Research Mentors: Stephanie Miller and Elizabeth Howie, Keren Sheffield, Art History

The French Post-Impressionist Georges Seurat is best known for his pointillist work "A Sunday Afternoon on the Island of La Grande Jatte." This iconic painting features a group of elegantly dressed Parisians spending a leisurely Sunday afternoon on the banks of the Seine. Most particularly, the painting is notable for reflecting social norms and cultural values of 19th-century France. The reflection of social norms and cultural values can be observed in the clothing and gestures of people separated from each other. Based on the observation of the fashion of clothing in "A Sunday Afternoon" that was popular

during this time period, the style of which women admired their dresses was likely to represent Sarah Baartman. In this proves to be the objectification and exploitation of Black women's bodies. This is exemplified by the tragic story of Sarah Baartman, a South African woman who was paraded across Europe as a spectacle because of her body. The bustle, a fashion accessory worn by the woman in the painting, was an early example of how Black women's bodies were used for fashion and entertainment. Deborah Willis's book "They Called Her… Hottentot" explores Baartman's story and how it reflects larger issues of race, gender, and colonialism. Similarly, the film "Imitation of Life" by Fannie Hurst also delves into issues of race and exploitation through the story of a Black woman who passes for white to succeed in the film industry. Overall, "A Sunday Afternoon on the Island of La Grande Jatte" can be appreciated not only for its artistic merit but also for its reflection of cultural and social values of its time. The painting reminds us of how Black women's bodies have been objectified and exploited throughout history. It also reminds us how we must continue to work towards an increased respect for all. This paper will explore the famous painting from an innovative social and cultural perspective rarely discussed in the literature on this painting.--

The Effect of Water Ionic (Chemistry) on the Total Polyphenol Content of Kombucha (*Poster Session*)
Hanson, Nicholas, Biochemistry
Faculty Research Mentor: Drew Budner, Chemistry
Kombucha is made by using a symbiotic culture of bacteria and yeast (SCOBY) to ferment sweetened tea. This fermentation produces a beverage with a unique aroma and flavor profile that varies dramatically based on its composition. While the exact origin of kombucha is unknown, it has recently gained popularity in the United States along with an extensive variety of unsubstantiated health benefits such as improving cardiovascular health, increasing weight loss, combating acne and wrinkles, relieving arthritis, lowering high blood pressure and cholesterol levels, and even the ability to reduce the invasiveness of malignant tumor formation. One of the potential key components in kombucha responsible for these supposed health benefits are the family of polyphenols, such as stilbenes, lignans, flavonoids, and phenolic acids. Considering the increasingly diverse composition of kombucha, from the different types of bacteria and yeast utilized, to the flavoring additives that can be added pre- or post-fermentation, our knowledge is limited regarding the effect that the varying ionic concentrations within the water used for brewing have on increasing or decreasing the total polyphenol content found within the kombucha. The impact that calcium, magnesium, bicarbonate, sulfate, and chloride concentration had on the measured total polyphenol content of brewed kombucha was investigated. The resulting data and information generated by the investigation can be used to aid in future kombucha production with improved total polyphenol content.

The Impacts of DACA on Migrant Children and Young Adults and What Actions Should be Taken (*Poster Session*)
Harris, Kylie, Political Science
Faculty Research Mentor: Edurne Beltrán de Heredia
The Deferred Action for Childhood Arrivals (DACA) was presented at the 5th U.S. Circuit Court of Appeals and ruled that the implementation of the program was illegal. Over the past 10 years DACA has affected it’s recipients and their families in many ways. It is a positive force for the recipients, their families, as well as the United States’ economy. Although, with the uncertainty between presidential offices and politics surrounding the program, it has impaired the community. The statistics provided is data based on DACA recipients from Mexico between the ages of 18-30 as they make up about 80% of recipients.

This research provides how each presidential administration has handled DACA and how it has affected it's recipients in terms of job security, education, and their family. Affects to family include separation of children or parents resulting in trauma and other social challenges. This gives reasons as to why the program and it's recipients should be provided protection.

Mental Health Literacy, Sleep Disturbances, and Mental Health among Those in Educational Settings Post-Pandemic (*Oral Presentation*)
Hatcher, Abigail, Public Health, Alyssa Avallone, Exercise and Sports Science, Clare Cuenya, Public Health and Caitlyn Flemmer, Biology
Faculty Research Mentor: Sharon Thompson, Swain Scholars, Health Sciences
In America, almost one in five adults has some form of a mental illness (Parekh, 2018) and those affected by COVID-19 may have a greater burden of mental health problems (Hossain et al., 2020). Sleep disturbances may affect the symptoms and severity of mental illness due to the emotional regulatory role of sleep (Harvey et al., 2011). This is a problem because one-third of Americans report sleeping less than the recommended amount (Blackwelder et al., 2021). While mental illnesses have increased, beliefs about mental health problems in the general population are severely limited as most have minimal understanding of mental health recognition and prevention (Kutcher et al., 2016). Low mental health literacy rates have led to undiagnosed and under-reported rates of mental health conditions (Tay et al., 2018). Moulin (2020) noted that mental health is of rising concern in academic settings and Pressley and colleagues reported that 30.9% of teachers received mental health counseling during the pandemic. College students are also feeling more depressed and anxious post-pandemic (Elharake et al., 2022). Therefore, the purpose of this study is to examine mental health, mental health literacy, and sleep disturbances in academic settings. An online and paper-pencil survey was developed using the Mental Health Literacy Scale (adapted from O'Connor & Casey, 2015), Sleep Disorder Symptom Checklist (Klingman et al., 2017), Patient Health Questionnaire-9 (Spitzer et al., 1999), and the Generalized Anxiety Disorder-7 (Spitzer et al., 2006). This survey was distributed in a southeastern coastal region. Results will follow.

Bacterial Two-Hybrid Assay of Interactions between MatK and Chloroplast Proteins RNC1 and WTF1 (*Poster Session*)
Hollins, Acacia, Biology and Kristen Presnell
Faculty Research Mentor: Michelle Bartlet, Biology
Cancer can be caused by many different mutations in cells. Some of these mutations are the result of incorrect intron excision by splicing enzymes. Introns are extra nucleotide sequences that must be removed from precursor RNA to get the correct template for protein translation. Intron excision is important in the nucleus of animal and plant cells, as well as cellular organelles like plant chloroplasts which have their own gene expression machinery. Introns can be removed by three mechanisms: 1) the nuclear spliceosome, 2) self-excision, or 3) maturase enzymes. MatK is the only maturase encoded in the chloroplast of plants. Maturases are prokaryotic enzymes that bind and excise a single intron. MatK interacts with seven different introns instead of the single intron of prokaryotic maturases. Further, nuclear-encoded proteins like RNC1 and WTF1 excise the same introns as MatK suggesting the possible formation of a splicing complex. These evolutionary divergencies in number of intron targets and possible association of multiple proteins for facilitating intron excision are reminiscent of an early stage in nuclear spliceosome evolution. Bacterial two-hybrid assays will be used to assess protein interactions among MatK, and the two nuclear-encoded proteins WTF1 and RNC1, to characterize this potential

chloroplast splicing complex. RT-PCR was used to amplify WTF1 and RNC1 coding regions followed by Gateway cloning into two-hybrid expression vectors and transformation into E. coli with interaction assayed by catalysis of a color substrate only expressed when the two target proteins interact.

Comparative Analysis of Implementing Solar Energy in South Carolina (*Poster Session*)
Huntzberry, Paige, Marine Science and Jo Whitney, Sustainability
Faculty Research Mentor: Pamela Martin, Political Science
Solar energy is becoming an increasingly popular method of providing energy to homes and businesses all over the world. Converting to solar energy is a huge step in reducing our carbon footprint, a driving force of global climate change. While this type of energy production provides an eco-friendly approach to power, requiring minimal maintenance and virtually no additional infrastructure, many are still opposed to the implementation due to financial reservations. The aim of this project is to design a solar array for installation on a building at the Medical University of South Carolina using Helioscope™ solar design software, providing a cost effective and practical approach to solar energy.

Juvenile Spot *Leiostomus Xanthurus* Age and Growth in Tidal Creek Nursery Habitats (North Inlet Estuary, SC) (*Oral Presentation*)
Hura, Emily, Marine Science
Faculty Research Mentor: Juliana M. Harding, Marine Science
Estuaries are geomorphologically complex habitats and productive nurseries for fishes. Spot *(Leiostomus xanthurus*) are seasonally abundant and ecologically relevant in U.S. Atlantic and Gulf Coast estuaries. Juvenile spot initially occupy and forage on infaunal invertebrates in smaller tidal creeks with abundant soft-sediment subtidal habitats. Both diet and feeding habitat change ontogenetically with larger, older spot moving into deeper estuary habitats during the end of their first year. Spot that grow quickly may better suited for successful transition to offshore habitats at the end of their first year, potentially increasing year-class survival. Juvenile spot age and growth rates were quantified for young of the year fish collected in July 2022 from two southeastern tidal creeks to evaluate potential creek-specific growth differences. Spot (n=47) were collected using seines and cast nets. Individual standard lengths (mm) were measured when lapilli were extracted. Age (days) estimates from lapilli will be used to estimate age-at-standard length and calculate individual growth rates. Spot standard lengths ranged from 34 mm to 84 mm. Creek specific age estimates and daily growth rates recorded in the lapilli will be compared to length-based growth rates in the same creeks from summer 2006.

"Who I Wish I Had" Music Industry through the Eyes of a Women and Why Representation Matters (*Oral Presentation*)
Johnson, Alondra, BioChemistry
Faculty Research Mentor: Eric Schultz, History
Being a woman in modern society is a challenge. As women, we face instances of misogyny and unequal opportunities. These incidents are becoming more prevalent and are slowly changing. While growing up, I noticed that in the music industry women are underrepresented and how the gender pay gap plays a significant role in the issue. One thing that differentiates this from everyday situations is that this field has not adjusted to reflect the current time of gender inclusion. The first big realization I had was realizing I was one of very few women who had learned and practiced audio engineering in my area. I learned audio from two exceptionally knowledgeable women, however when I started working in the field I realized something. I was in a male-dominated world and had to figure things out for myself because of the issue of misogyny. Being a woman, I was often viewed as unknowledgeable on the

subject because men would assume I had no interest because it is a "man's job". However, I did have a passion for audio. I find the subject interesting because it is something we as humans rely on daily. I would often find myself researching what things meant that no one in my environment would explain. I have never really had representation as a Latina woman in sound engineering. I never had someone to really look up to. I hope to bring awareness to this issue and be "Who I Wish I Had".

City of Conway: Historical African American Churches (*Oral Presentation*)
Johnson, Ruthie, History
Faculty Research Mentor: Aneilya Barnes, History
This project centers on the historical African American churches of Conway, South Carolina, allowing the audience to envision the city of Conway during the period the churches were established. These churches provide a story of the community and the people who once attended them. They also played a significant role for a community of people who historically have suffered tremendously. Community preservation and cultural heritage are the key factors in the making of this project, as it will bring attention to the historical areas of Conway, SC that have been historically overlooked. The story behind the churches will consist of where they will be built and the communities they served, because churches were a safe haven for African American people for centuries. This project will use advanced historical research methods, such as oral history, digital tools, and maps. A website to host the project allows easy access to historical information. African American history is oftentimes overlooked, and this project intends to bring forth a new light to the city of Conway, SC to give the locals and visitors a piece of the town's intriguing history.

Historical Homes on Elm Street in Downtown Conway (*Oral Presentation*)
Johnson, Arune, History
Faculty Research Mentor: Aneilya Barnes, History
The history of Conway homes possesses some critical historical insights that date back to the late 19th century. The seven homes that are the focus of this project on Elm Street in downtown Conway, illustrates the vital history of the community. Having a digital component that is easily accessible and available to people in the community will be an important aspect of this project. Having the history and visuals of these homes will allow the community to analyze the importance of the homes and the history that contributes to the foundation of the Conway community. The project will center on personal stories from members who live and contribute to the community. Using both primary and secondary sources as well as methods of research, in collaboration with community partners will contribute to the evolving and present history that brings attention to the important historical aspects that are present throughout Conway.

The Origin of the Human Superiority Complex (*Poster Session*)
Kinavey, Peyton, Biology
Faculty Research Mentor: Sara Rich, Honors
For decades humans have possessed a superiority complex regarding nonhuman beings, but this has not always been the case. Through analyzing prehistoric art, such as therianthropic figurines and nonhuman animal motifs in cave paintings, it appears that prehistoric humans practiced respect for fellow animals and even viewed them as equals. These results are comparable with ethnographic data from contemporary hunter-gatherer and small-scale agricultural societies all over the world. Thus, it is suggested that the rise of industrial agriculture and the meat and dairy industries, alongside the philosophical justifications for their continuance, may have contributed to the widespread idea of

human superiority. While the ecological consequences of corporate farming are well documented, this research concludes that to halt these effects, major revisions to agricultural practices will need to be established, and the ideological reset will follow.

Bioinformatics Tool Kit for Interpreting Genome Sequencing in Bacteriophages (*Poster Session)*
Kinerson, Emma, Biology
Faculty Research Mentor: Dan Williams, Biology
Recent advances in genome sequencing have produced vast amounts of nucleotide sequences, but these sequences don't contain easily understood information regarding the organism. For example, bacteriophages infect bacterial cells and many phage genomes have been sequenced, but still little is known regarding their genes structure and function. Bioinformatic techniques have been used to decipher the sequence into an understandable annotation. In this study, a bacteriophage discovered at Coastal Carolina University, was annotated using seven guiding principles of bioinformatic techniques for interpreting data from sequenced genomes.
These guiding principles are: 1) longest reading frame, 2) looking for overlaps or gaps, 3) comparing annotated start codons, 4) coding potential, 5) nucleotide BLAST of start sequence, 6) ribosomal binding scores, 7) HHPRED function of sequence.
This annotation will have various contributions to the scientific community through future applications in job fields with a focus on microbial life based on the understanding of newly annotated gene sequences. For example, the use of bacteriophages in developing new medicinal treatments such as phage therapy.

Effect of Endophytes on Anethum Graveolens (Dill), Synthesis of Volatile Organic Compounds (*Oral Presentation)*
Kinerson, Emma, Biology
Faculty Research Mentor: Michelle Barthet, Biology
Volatile organic compounds (VOC's) are emitted from plants and interact with the plants environment in various ways. Terpenes are the most widely released plant VOC's, and specifically monoterpenes play a key role in the interactions between plants and insects. In Anethum graveolens (dill), methyl eugenol and limonene, are volatile compounds that attract various pollinators to the plant. Endophytes have been discovered to live symbiotically with various plants, but little is known regarding their role in the synthesis of volatile organic compounds. We propose that the presence of endophytes in Anethum graveolens (dill) will increase the synthesis of these secondary metabolites. Dill plants will be grown under four growth conditions: 1) sterile seeds and sterile soil, 2) unsterile seeds and sterile soil, 3) unsterile seeds and sterile soil, 4) unsterile seeds and unsterile soil. After maturation of the plants, floral organs will be sampled to examine gene expression of enzymes involved in the synthesis of methyl eugenol and limonene. The molecular data will be analyzed to determine the effect of the endophytes on the synthesis of these volatile organic compounds. Understanding the effect of endophytes on the synthesis of VOC's could potentially be used to address multiple agricultural and ecological issues regarding pollination.

Demonstrating Dispersion Relations with a Classical System (*Oral Presentation*)
Kynard, Jainah, Applied Physics
Faculty Research Mentor: Scott Carr, Physics and Engineering Science

A dispersion relation shows how a frequency depends on wavelength in a medium, which is a useful relationship in both quantum and classical physics, or anywhere a wave phenomenon exists. This is a well-known relationship in physics, but since wave phenomena in quantum and classical physics are invisible, the demonstrations of wave dispersion are usually abstract. This project is a demonstration of the typically abstract phenomena of wave dispersions in classical and quantum physics, using a system of coupled harmonic oscillators where the wave dispersion is visible and measurable. When a series of several harmonic oscillators are coupled, they can replicate the behavior of different wave systems by yielding a spectrum of resonant frequencies. By measuring these resonant frequencies and finding the wavelength of the oscillations, a dispersion relation can be found.

Developing a Virtual Reality Module for Promoting Coastal Sustainability (*Oral Presentation*)
Leer, Kainen, Engineering Science
Faculty Research Mentor: Xiangxong Kong, Chemistry
Coastal communities accommodate a growing population across the world but are particularly vulnerable to natural impacts due to the actions of the sea, strong winds, ground motions, and water surges. Maintaining the sustainability of coastal zones, therefore, is an urgent need for local government agencies and stakeholders. While multiple efforts have been investigated across government agencies, researchers, industries, and the public to address the challenge of coastal sustainability, education plays a pivotal role in attaining sustainable development goals. The objective of this proposed research is to contribute to the Sustainable Development Goals (SDGs) by developing a Virtual Reality (VR) module to incorporate the sustainability of the coastal community against the erosion challenge. The VR module consists of four virtual scenes with multiple transition hotspots linked together. The first virtual scene is created via a 360-degree coastal image; while the other three virtual scenes are reconstructed via a photogrammetry workflow through 3D reconstruction of a coastal cliff via drone images. Additional hotspots (e.g., texts, 2D video, and sounds) are added in the virtual scenes to allow the user to interact with the virtual environment. Through the VR scene exploration, the user can learn about coastal erosion challenges, engineering technology for monitoring erosion, and experience the cliff in the virtual environment.

The Relationship between Mock Juror Gender and Police Officer Gender on Judgments of Police Use of Force (*Oral Presentation)*
Leo, Samantha, Psychology
Faculty Research Mentors: Melissa Baker and Andrew Terranova, Psychology
The goal of the study was to examine how gender relates to mock jurors' perceptions of police officer use of force in a criminal trial scenario. Previous research suggests perceptions of police are affected by various demographic factors such as prior contact, age, social class, and race/ethnicity. For example, those who come from economically disadvantaged neighborhoods and minorities view police officers less favorably than their counterparts (Dukes & Hughes, 2004; Geistman & Smith, 2007; Paine & Gainey, 2007). Little research has been conducted on how mock juror gender and police officer gender impacts decisions during trials involving police use of excessive force. In the present study, we investigated if police officer gender and juror gender influenced juror decisions in a criminal trial describing a police officer being charged with violating a civilian's civil rights by using excessive force. Participants read a criminal trial vignette, viewed video footage of the police officer-civilian interaction, and were asked to render a verdict of guilty or not guilty. Demographic information was also gathered from the participants. Data collection is ongoing, but preliminary results indicate female mock jurors are more

likely to find the police officer guilty compared to male mock jurors. There are no significant findings for the factors of police officer gender or an interaction effect, which may be due to a lack of power (N=60). The limitations of the current study as well as the implications of the results will be discussed during the presentation.

The Collegiate Response to Name, Image, and Likeness (NIL) Legalization within the SunBelt Conference (*Oral Presentation*)
Magann, Noelle, Marketing
Faculty Research Mentor: Fei Gao, Recreation and Sports Management
Monetizing off one's Name, Image, and Likeness became legal for collegiate athletes on July 1st, 2021. Since then, Universities across the country have scrambled to develop programming, found collectives, and create deals for their athletes, effectively turning collegiate athletics into the “Wild Wild West ''. In this study, I focused on gaining an understanding of the different types of reactions to NIL legalization amongst SunBelt Conference universities. This included comparing what university athletic departments did in terms of program development, website updates, partnering with collectives, and more unique reactions to each university. I also ran a study of how CCU athletes, coaches, and athletic staff viewed NIL and how they felt CCU handled legalization (CCU’s response) through surveys of athletes and staff of 9 varsity teams and athletic administration. My research reflects that 71% of athletes and 62% of staff at Coastal believe it could be improved. Over 90% of Athletic staff surveyed wished more was offered by Coastal in terms of NIL educational programming for their athletes, and over 90% of athletes at CCU wished there was more NIL educational programming offered. By researching this topic, I can develop actionable items for Coastal Athletics to follow to improve their NIL response, therefore improving recruiting, athlete development, and community involvement. Thus making CCU athletics the top school for athlete NIL in the SunBelt Conference.

An Analysis of SunBelt Football Athletes Engagement Rates on Instagram (*Oral Presentation*)
Magann, Noelle, Marketing
Faculty Research Mentor: Heather Carle, Marketing
Since its founding in 2010, Instagram has developed into one of the world's largest social media platforms. In 2022, $33.3 billion was spent on Instagram advertising by companies, firms, etc. Additionally, almost $5 billion was spent on Influencer marketing in 2022, a 27.8% increase from 2021 and a 34.7% increase from 2019. These statistics show the vast importance influencers have on marketing in today's business world and society as a whole. For this project, I looked into the engagement rates of SunBelt Football athletes. I used at least 2 athletes from each university that had over 1,000 followers on Instagram, falling into three categories: Nano, Micro, and Mid-Tier influencers. I compared engagement rates by time of year, position, school, division, influencer tier, certification status, and sponsorship status. Taking the average engagement rates of athletes such as Grayson McCall (QB-CCU), Kyle Vantrese (QB-GSO), and David Nunez (P-TX St). Average engagement rates were higher for 95% of the athletes studied in this project compared to a selection of NFL athletes with an influencer status of Mid-Tier or Mega. Quarterbacks in this study had an average engagement rate of 22.77% compared to the average nano-influencer engagement rate of 3.69% by Aspire.io. The information found in this study can be used by collegiate athletes to promote the value of their influence for future sponsorship deals.

Evolutionary Analysis of Plastic-Degrading Enzyme PETase Found in the Endophytic Microbiome of Marine Viridiplantae for Phytoremediation (*Poster Session*)

Mazariego, Marissa, Biology
Faculty Research Mentor: Michelle Barthet, Biology
In 2016, a bacteria found outside a recycling facility in Japan was discovered to decompose and metabolize polyethylene terephthalate (PET). Ideonella sakaiensis exhibited catabolic activity by binding to the surface of the products and delivering PETase enzymes to degrade plastic into its original structural components. PET is a clear plastic designed for single-use packaging. Despite the claim that PET plastics are 100% recyclable, only 31% of PETs are recycled. PETs do not decompose for up to 450 years in disposal facilities, resulting in the clogging of natural landscapes with litter and phthalate toxins. It is suggested that the selective pressure of microplastics in the environment guided evolution of these enzymes from hydrolyzation of cutin to degradation of plastics. Most work conducted around this enzyme consists of improving the degradation rate via surfactant addition and genetic manipulation. Outside of genetic manipulation, there is a lack of literature on the evolutionary phylogeny and complete sequencing of the enzyme. This research aims to identify the PETase sequence and compare enzyme structures to determine how PETase activity varies in different fungal endophytes of plant species. Anticipated outcomes of this research project are: to synthesize a phylogenetic tree of PETase, determine the relationship between endophytic PETase activity and marine plants with endophytic microbiomes, and isolation of local plant DNA to observe the presence of natural PETase. Exploiting the lineage between fungi, endophytes, and marine plants with endophytic microbiomes could determine if natural PETase is the solution for microplastic degradation in our local wetlands.

Coastal Charge (Oral *Presentation*)
McCoy, Nina, Aaron Osborn, Hannah Simchock, Sustainability and Coastal Resilience
Faculty Research Mentor: Pamela Martin, Political Science
Trying to find the best way to live sustainably can get daunting and make the individual feel powerless, but there are ways that small changes can have a big impact. University Place, apartments owned by Coastal Carolina University (CCU) and occupied by their students, allows students to experience apartment living, apart from monthly utility bills. This doesn't mean that the energy and water used goes undocumented, but it is not as visible to the residents as it would be in a non-university-affiliated housing situation. Coastal Charge is a student-organized competition that promotes energy-saving advice and offers incentives for students to reduce their energy usage, preparing them for life after attending CCU, and empowering students to see the impact that behavioral changes can have on their energy consumption. This was previously conducted in Tradition Hall in the Spring 2022 semester and was conducted again in University Place during the Spring 2023 semester. In addition to the competition aspect, Coastal Charge also includes conducting participating student surveys to assess confidence in the understanding of sustainability practices, change in practices due to the competition, and willingness of students on campus to continue to use what they learned during the competition in other situations. This will show how important sustainability is to students at CCU and will offer them the chance to see how they can make sustainable choices in their day-to-day lives.

Effect of Lactate Dehydrogenase in Alzheimer's Disease Using Fruit Fly Model (*Poster Session*)
McCutcheon, Hannah, Biology, Elizabeth McCrea, Biology
Faculty Research Mentor: Fang Ju Lin, Biology

The common fruit fly (*Drosophila Melanogaster*) was used as a model organism to investigate the function of the lactate dehydrogenase gene (LDH) in Alzheimer's disease. Human Alzheimer's genes were implemented into fruit flies by microinjection to examine the neurodegenerative properties of the disease. Since humans and fruit flies share a similar genetic makeup, when human Alzheimer's gene is given to the fruit flies, they exhibit similar intellectual and physical defects seen in humans. In previous experiments, it was found that down regulating certain genes allowed the transgenic flies to live longer and reduced their locomotor deficiencies. Lactate dehydrogenase (LDH) is one of the genes that could be downregulated to rescue transgenic flies. LDH is an enzyme that is involved in cellular metabolism which converts lactate to pyruvate. Research shows that Alzheimer's patients show an increased level of LDH activity. The results of the behavioral analysis data indicated that the knockdown of LDH gene in flies containing human Alzheimer's disease does rescue the flies by lengthening lifespan, improving locomotor function, and reducing amyloid B plaques. Future research should explore the role of LDH in Alzheimer's disease by using chemical inhibitors to downregulate LDH while concurrently looking at the amyloid plaques. Successfully using chemical inhibitors to achieve the same outcome as gene therapy would be a more feasible approach to treating humans.

Online Classification of Shock and Vibrational Data Using Convolutional Neural Networks *(Oral Presentation*)

McIewee, Grace, Computer Science

Faculty Research Mentor: Nathan DeBardeleben, Los Alamos National Laboratory High Perf. Computing Design (HPC-DES) UltraScale Systems Research Center (Co-Exec Director Technical Operations) Senior Research Scientist LANL Science Ambassador

Our funding sponsor, Los Alamos National Laboratory (LANL), is interested in automatic anomaly detection and classification applied to highly instrumented flight shock and vibrational data for the purpose of providing insight into operational safety. In this work, we leverage recent advancements in machine learning (ML) by applying convolutional neural networks (CNNs) to a publicly available motor vibrational data set that serves as a proxy to the actual LANL data. We successfully train a CNN to classify anomalous motor states using the dataset, and use this model to simulate real-time anomaly detection and event classification. By extending our prior work in this area, we are able to achieve higher model accuracy, precision and recall in a variety of experimental configurations.

The Migration of Different Cultural Aspects between the Early 20th Century French Art Movement and Chinese Immigrants (*Poster Session)*

McNeil, Tiffani, Languages and Intercultural Studies

Faculty Research Mentor: Edurne Beltran, Languages and Intercultural Studies

The early 20th century produced some of the most renowned artists in the world, such as Jean Dubuffet and Marcel Duchamp. The art world at this time was rapidly expanding, and there was a significant movement of different techniques and styles being developed into what is now considered modern art. Artists from around the world immigrated to France during this time to study at some of the most notable academies of art, including a large group of Chinese artists. This poster will examine how this French movement strongly influenced these Chinese immigrants because studying in France forced them to face new artistic concepts and ways of thinking that heavily contrasted with Chinese art. By examining different Chinese artists that immigrated to France during the early 20th century, such as Lin Fengmian (林风眠), Pan Yuliang (潘玉良), and Pang Xunqin (庞薰琹), we can better understand the migration of diverse cultural aspects from one culture to another.

Identifying Members of the Family Perophoridae Using COI and 18S as Molecular Taxonomic Markers (*Poster Session*)
McNeil, Tiffani, Marine Science
Faculty Research Mentor: Lauren Stefaniak, Marine Science
Ascidians (also known as sea squirts) are a group of marine benthic invertebrates that are in the *phylum Chordata*. Identifying this group of organisms using morphological techniques can be difficult as many species are very similar and there are few taxonomic experts. It is important that there is a better understanding of their taxonomy because ascidians are found globally and can be extremely invasive, posing a threat to many marine environments and aquaculture. In this study, we identify members of the family Perophoridae from Belize using COI and 18S as molecular taxonomic markers, validating morphological identifications and expanding DNA barcoding databases.

Best Practices in Comprehensive Planning for the Promotion of Sustainable Development in Georgetown County, South Carolina (*Oral Presentation*)
Meagher, Michael, Public Health
Faculty Research Mentor: Pamela Martin, Political Science
The United Nations Sustainable Development Goals (SDGs) provide a framework for governments across the globe to work toward ending poverty, protecting the planet we call home, and improving the lives of all people. These goals can be localized to assess the capacity of city, county, and regional planning efforts to promote sustainable development. Comprehensive plans are policy documents that serve as a guide for development decisions that reflect a community's desired future. The nature of modern comprehensive planning suggests it is the best tool for localizing SDG's and carrying out the directives of the United Nations 2030 Agenda for Sustainable Development.
The Georgetown County Comprehensive Plan continues to go through an expansive update to provide a new guide for policymakers to promote and implement sustainable practices that benefit the 63,000 residents and protect the abundance of natural resources unique to this growing county on the South Carolina coast. From land conservation projects and cultural resource preservation to economic development and infrastructure initiatives, sustainable planning can be applied to every working element of a community such as Georgetown County.
This report will analyze the development of the Georgetown County Comprehensive Plan as it relates to excepted best practices for regional planning that promotes inclusive, safe, resilient, and sustainable communities described in the 11th United Nations Sustainable Development Goal. By comparing the Georgetown County Department of Planning's process for developing and implementing a comprehensive plan to guidelines for best practices and examples of successful planning initiatives, this report will provide insight into how the county can better utilize comprehensive planning to implement policies that promote sustainable communities and the application of UN SDGs in the community.

Comparison of Tonal and Free Weight Back Squat Workouts on Muscle Activation, Muscle Oxygenation and Fatigue (*Poster Session*)
Melton, Riley, Exercise Science
Faculty Research Mentor: Justin Guilkey, Kinesiology
The Tonal Home Gym is a cable resistance machine that utilizes its proprietary Smart Flex system, which provides dynamic resistance throughout a particular movement. This variable resistance could increase muscle activation, metabolic stress and muscle damage in sets to fatigue compared to traditional free

weight exercise. This study will examine muscle activation, muscle oxygenation and fatigue during a single set of barbell squat to fatigue using free weights and Tonal. The participants will be healthy adults who are recreationally active. During the first visit, participants will perform a squat set to determine their predicted one-repetition maximum weight. During the two experimental trials will be Tonal Home Gym or free weights and will be assigned in a random order. The participants will back squat at 60% of their 1RM and will perform as many repetitions until to voluntary fatigue. Participant's muscle oxygenation will be measured by near-infrared spectroscopy and their muscle activation will be measured using electromyography on the non-dominant and dominant *vastus lateralis*, respectively. Muscle oxygenation and electromyography will be normalized to a physiological calibration and maximal isometric voluntary contractions, respectively. Data will be compared at similar time points during the Tonal trial and free-weight trial. Fatigue will be measured by the change in jump height and power from before and after the squat. Based on the dynamic resistance offered by the Tonal Home Gym, it is hypothesized the Tonal Home Gym will exhibit lower muscle oxygenation, greater muscle activity, and greater muscle fatigue compared to free weights.

Identifying Overwash Layers in Marsh Sediment (*Poster Session*)
Mina, Charles, Marine Science
Faculty Research Mentor: Zhixiong Shen, Marine Science
Hurricanes have become one of the most researched topics in recent years, due to their damage costs and their uncertain correlations with climate change. Much of the research for this topic has come from direct interaction with storms, such as damage reports and land surveys. However, there is a gap in the historical record of hurricanes, as most historical record is only written. These records can be biased and are too short of a record to identify a pattern of climate change. Grain size analysis, where sizes of sediment grains are measured, can be used to identify the storm events by identifying points of larger sediment diameters as points of events that caused storm sediments to be pushed from the beach to the marsh environment, known as overwash. Through this method and use of radiocarbon dating, a record of storms can be created on a geologic timescale and can expand our knowledge of the historical pattern of hurricanes. Using a sediment core taken from St. Vincent Island, FL, a barrier island in the Gulf of Mexico, a geologic record of the area was created from the data. The results of which shows that since the environment transitioned from a beach sand environment, there have been three distinct overwash events at approximately 300 CE, 1000 CE, and 2010 CE. None of these events show any sign of being abnormal for the region or show an increase in intensity or frequency.

Examining the Role of Emotional Exhaustion on Susceptibility to Misinformation through Social Media (*Oral Presentation*)
Mkhoyan, Yeva, Psychology
Faculty Research Mentor: Melissa Paiva-Salisbury, Psychology
In the past decade, social media has infiltrated every sphere of human existence. These social networks have expanded beyond their original role, playing a critical role in disseminating information (Nguyen et al., 2012). Unfortunately, the increased digital spread of misinformation has led to cause for global concern (Del Vicario et al., 2016; WEF, 2023). Recent research has started to focus on how excessive exposure to social media can result in emotional exhaustion (Lee et al., 2016; Zheng and Lee, 2016). However, the relationship between emotional exhaustion and vulnerability to misinformation is a complex issue that is relatively unexplored. Emotional exhaustion, characterized by physical, emotional, and mental fatigue due to persistent stress, has been linked to impaired cognitive functioning and

performance (Feuerhahn, 2013; Horvat and Tement, 2020). This can potentially make a person more vulnerable to the influence of misinformation, especially through social media (Wu, 2022). As this relationship was not widely researched, this research examined the extent to which emotional exhaustion played a role in susceptibility to misinformation. To test this hypothesis, participants were exposed to rounds of exclusively negative news through a simulated social media feed and then presented with misinformation. We predicted that those left feeling more emotionally drained after exposure to negative news were more likely to fall for misinformation. Results will follow.

Hazard Mitigation Plans and Sustainable Communities (*Oral Presentation*)
Morrell, Brooke, Political Science
Faculty Research Mentor: Pamela Martin, Political Science
Every community is susceptible to hazards and natural disasters, so it is very important that communities take the proper precautions to reduce the effects of disasters. Hazard Mitigation Plans are an important first step for sustainable communities. Through my work at the Waccamaw Regional Council of Governments, I have been able to examine the best practices and resources to develop a hazard mitigation plan for Williamsburg County that focuses on the sustainable development of the community.

Prevalence and density of *Perkinsus marinus* in *Crassostrea virginica* from Murrells Inlet and North Inlet, SC (*Oral Presentation*)
Mouer, Nora, Marine Science
Faculty Research Mentor: Juliana Harding, Marine Science
Eastern Oysters (*Crassostrea virginica*) host parasites including *Perkinsus marinus* that infect oyster hemocytes causing emaciation which potentially reduces filtration within estuaries. Dermo, the disease, caused by P. marinus reduces oyster growth and fecundity and increases seasonal oyster mortality. Dermo activity increases at water temperatures above 25°C and salinities greater than 25 psu. This research quantifies seasonal P. marinus prevalence and density in Murrells Inlet and North Inlet oysters collected from December 2020 to December 2022. Oysters (n>5) were collected at least quarterly from subtidal populations. Oyster shell length (mm) was measured when mantle tissue samples were removed, weighed (g), and incubated and examined to describe parasite prevalence and density. Individual parasites were counted with a compound microscope to quantify parasite density per oyster. Prevalence (p= # of infected individuals/# of individuals in a sample) was generally lower in the late spring as water temperatures started to increase. Generally, parasite densities at both sites increased with increasing water temperatures and salinity. Observed trends in parasite density will be discussed in relation to oyster shell length (mm), water temperature, and collection sites.

Ecofeminism: Gender and Word Associations (*Poster Session*)
Murray, Caroline, Psychology
Faculty Research Mentor: Andrew Terranova, Psychology
Ecofeminism is the environmental philosophy that finds an association between nature and the female gender in society. Using correlational design, in the current study the associations between gender and nature terms and gender and occupations were examined in 106 college aged students (Mage = 19 years, 4 months, 10% male, 89% female, 79% White). Using a word association test created for the use in the current study, participants reported their association between nature terms, human-made terms, and occupations using a 11-response scale ranging from 0= “Little to no association” (low masculinity, low femininity) to 10= “Masculine” or “Feminine.” Findings indicated that nature terms had a higher

association to femininity than masculinity. These findings support the environmental theory of ecofeminism, providing much needed research to this field of study. More research, however, is needed in order to add validity to scientific claims of the theory, as this area is not yet heavily studied.

Isolation and Analysis of Extracellular Vesicles from Lactic Acid Bacteria (*Poster Session*)
Myers, Isabel, Biochemistry
Faculty Research Mentor: Brian Lee, Chemistry
Lactic acid bacteria have probiotic properties and are found within the microbiome of the human gut having a significant influence on human health. Extracellular vesicles (EVs) are produced by probiotic bacteria of the gut and are thought to be involved in intercellular communication with other bacteria and with the host. EVs are produced by prokaryotic bacteria and derived from the outer membrane in Gram-negative bacteria. The thick layer of peptidoglycan present in Gram-positive bacteria was thought to prohibit release of EVs. Recent studies have suggested that autolysin may allow EVs to be released from Gram-positive bacteria. The goal of the study was to develop an isolation procedure and observe the contents of the isolated EVs from lactic acid bacteria. It was hypothesized that the protein and RNA content of the EVs could provide greater insight into the mechanisms of intercellular communication. Streptococcus thermophilus was grown in culture. The growth cultures were centrifuged to pellet the cells. The supernatant was filtered to remove the remaining bacterial cells. The filtrate was concentrated by ultrafiltration. The retentate was presumed to contain EVs, and gel electrophoresis was run to determine protein content. Scanning electron microscopy was used to observe the membrane surface of cells isolated from growth cultures and to look for budding EVs. The protein content observed during the process of isolation is indicative of the presence of EVs. Future studies include identification of the protein and RNA content of the EVs as well as further development of methods to improve isolation techniques.

Green Space Building Social Capital (*Oral Presentation)*
Osborn, Aaron, Sustainability and Coastal Resilience
Faculty Research Mentor: Pamela Martin, Political Science
In my presentation, “Green Space Building Social Capital,” I will examine how green spaces have positively impacted communities on a local and global scale. Green space can increase social capital, reduce crime and improve mental health. I will provide local and global statistics as well as empirical evidence and case studies. With this data, I will use it to demonstrate why green space in Georgetown County would be beneficial to the people, planet and prosperity. In this presentation linkages between Sustainable Development Goals 2 (Zero Hunger), 3 (Good Health and Well-Being), and 12 (Responsible Consumption and Production) will be represented.

Social, Linguistic, and Religious Challenges among Muslim Converts in Contemporary Spain *(Poster Presentation)*
Othman, Deena, Languages and Intercultural Studies
Faculty Research Mentor: Dr. Edurne Beltran De Heredia, Languages and Intercultural Studies
The presence of Muslims in Spain dates back to 711 AD when Muslim forces invaded the Iberian Peninsula. Islamic communities began to grow and deepen their religious roots in Spain while converts and immigrants increased. This was known to be Islamic Spain. A thousand years later, conversions and immigrations are still continuing in Spain while the other majority of religions such as Catholicism and Christianity remain. With this also came Islamaphobic hate crimes against Muslims. Around 2 million Muslims reside in Spain today; half of them do not have Spanish citizenship, making them vulnerable to

the majority. Inside Mosques, walls were flooded with messages like “Stop the invasion” and “No to Islam”. This is an ongoing threat to Muslim converts and immigrants. Discrimination in Contemporary Spain increases for many reasons, including today's media and fake news. This research will highlight the social, linguistic, and religious challenges Muslim converts face in Contemporary Spain. By studying media outlets such as the news, social and the web, this research will show the effect these media outlets have on these specific challenges among Muslim converts.

Medicalization and American High School Shootings (*Oral Presentation*)
Owens, Rhoslyn, Sociology
Faculty Research Mentor: Jason Eastman, Sociology
Modern discussions regarding the aftermath of American high school massacres are typically oversimplified, as they largely depict school shooting perpetrators as victims of bullying and mental illness. Although academic work concerning the characterized shared traits among adolescent perpetrators exists, studies often exclusively concentrate on the psychological assessments of school shooters. In accordance with the medicalization of deviance paradigm, the medicalization of American high school massacres is researched, as to whether social perception reinforces a constructed cultural narrative that medically protects the criminally deviant behavior of high school shooting perpetrators. Recruited through their enrollment in (Sociology) courses at a southern predominately white university, 57 undergraduates completed an online survey, which examined the general public’s labeling of white criminality. The hypothesis adopted for this study posits that the interaction between gender and race obscures the social perception of American high school shootings and their contributory bases. Findings confirm that male respondents are much more likely than female participants to promote mental illness as a rationale for the occurrence of high school shootings and reject race-related causes. Nonwhite respondents are much more likely than white participants to promote race as a credible rationale for the occurrence of high school shootings. The findings have implications for academics as they research the underlying social factors in American high school massacres with a revitalized sociological discourse of deviance.

The Holocaust Experienced by Jewish Women (*Oral Presentation)*
Parker, Ra-Quelle, History
Faculty Research Mentor: Philip Whalen, History
We have plenty of information on The Holocaust from the male point of view, such as Elie Wiesel, Primo Levi, and Viktor Frankl, but there is barely any information on the female point of view during The Holocaust beyond the point of Anne Frank or Ida Fink. This study shows the horror in the camps that women had to face. Women feared sexual harassment, among other horrible treatment in different camps. The sole purpose of this paper is to find more information on Jewish women’s experience in the ghettos and concentration camps and to understand the female victims of The Holocaust from different articles.

A New Approach to the Core of Flinderole C (*Poster Session)*
Pettijohn, Ana and Claire Romain, Biochemistry
Faculty Research Mentor: Bryan Wakefield, Chemistry

The flinderoles A-C are a class of anti-malaria bisindole alkaloids from plants of the Flindersia genus. Flinderole C was specifically from the Papua New Guinean plant called F. amboinensis and is the most potent antimalarial of the group. Malaria is a parasitic infectious disease usually found in the hot, tropical regions of the world, such as parts of Africa. It is estimated that nearly half the world's population lives in an area where it is endemic. Furthermore, malaria was estimated to have caused over 600,000 deaths in 2020. While measures to limit the spread of the disease lessen its impact, there is still a need for treatments. There are numerous drugs and naturally occurring products that have been used to treat malaria, but many have lost their effectiveness due to drug resistance in the cells, so flinderoles could be a platform to build new drugs on. Through our research we are conducting a Friedel-Crafts reaction to produce a five membered ring of flinderole. We are attempting to generate an alcohol that is required for ring closure through a sequence using a lactone opening which will limit the steps necessary to make the allylic alcohol needed for the Friedel-Crafts reaction. **Do Mock Jurors'**

Attitudes Relate to Jurors' Verdicts of Police Use of Excessive Force According to 18 U.S.C. § 242?
(*Oral Presentation*)
Pruett, Noah, Psychology
Faculty Research Mentor: Melissa Baker, Psychology
There is limited research regarding jurors' attitudes toward police and how jurors' attitudes toward police might affect their perceptions of guilt for a police officer who faces criminal charges known as "deprivation of rights under the color of law." The goal of this study was to examine the relationship between mock jurors' attitudes toward police and their judgments of a police officer's use of excessive force according to 18 U.S.C. § 242. To find a defendant guilty of § 242, a jury must find the defendant violated four specific criteria. In the study, participants (N=88, 31.9% male, 64.8% female, Mage = 19.54) answered questions designed to measure their attitudes toward police. Next, participants were informed to imagine they were serving on a jury for a criminal case describing a police officer charged of using excessive force against a civilian. As part of the vignette, participants watched a confrontation video depicting the charged officer and the civilian and were asked questions regarding their perceptions of the officer's use of excessive force. Results revealed that mock jurors' attitudes toward police were related to only one of the three criteria according to § 242. These findings have important applied implications for how jurors might use their attitudes toward police when making verdicts of police misconduct.

Acculturation and Career Aspirations within Hispanic Communities: Investigating the Impact of Culture and Identity on College Completion and Representation within STEM (*Poster Session)*
Reyes-Campuzano, Antonio, Language and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
According to a Pew Research Center report from April 2021, Hispanic people only make up 8% of workers in STEM and only 12% of Hispanics who receive a bachelor's degree, choose STEM. This study aims to understand and investigate the contributing factors of low representation of Hispanics in Stem such as the lack of educational resources, lack of opportunities, language barriers, and discrimination. This research will compare first-generation immigrants to Hispanics born and raised in the US in order to identify differences in cultural values and beliefs in relation to their career aspirations. It will also investigate the struggles of modern Hispanic students attempting to balance progression within their communities without sacrificing their ethics and principles aiming to break social and cultural norms. Examples of challenges faced includes socioeconomic factors, such as immigration status which may impede even getting a job, stereotyping, which causes self-doubt, lack of mentors, due to a large

percentage being first-gen, and workplace culture, which may not be inclusive. This study's relevance is due to the importance of addressing systemic barriers and promoting equity within STEM.

Telling Their Story: Identifying Stranded Bottlenose Dolphins Using Dorsal Fin Photo-Identification to Match Known Individuals (*Poster Session*)
Richa, Grace, Marine Science
Faculty Research Mentor: Robert Young, Marine Science
Bottlenose dolphins are protected and managed under the Marine Mammal Protection Act. When dolphins die (strand), researchers investigate the cause of death, but additional information regarding past experience and distribution can help to identify long-term exposure to pathogens and threats. The objective of this study is to use dorsal fin photo-identification to identify stranded bottlenose dolphins by matching them to known individuals from historical CCU research survey data. Photos from vessel-based surveys in Cape Romain, Murrells Inlet, Winyah Bay, and North Inlet, SC were sorted, cropped, and compared to existing fins in the CCU catalog using finFindR, a photo processing application. Images were then entered into the FinBase photo database as either a match or a new ID. The updated CCU catalog was then compared to stranded dolphin fin images on the OBIS-SEAMAP Mid-Atlantic Bottlenose Dolphin Catalog. Matches were reported, and sighting histories provided for stranded animals in order to aid in the management of dolphin populations.

Identification and Analysis of the Regulatory RNA TrmS in the Probiotic Bacteria *Streptococcus thermophilus* (*Poster Session*)
Rose, Finn, Biochemistry
Faculty Research Mentor: Brian Lee, Chemistry
The human microbiome contains billions of bacteria, primarily found in the gut. Many of these bacteria are non-pathogenic and could have a beneficial relationship with our cells. One non-pathogenic species of interest is Streptococcus thermophilus for its frequent use in the dairy industry. To further understand these bacteria, we must study how they regulate essential functions related to survival, reproduction, and potential host interaction. Genes can be regulated at the transcriptional level by regulatory RNA which fold into tertiary structures that can interact with other RNA, proteins, or both. Our goal is to identify and characterize regulatory RNA in S. thermophilus along with their associated proteins to characterize potential communication between probiotic bacteria and host cells.

Candidate RNA TrmS was identified based on a potential cis-regulatory element downstream of a tRNALeu methyltransferase in S. thermophilus. Secondary and tertiary structures were predicted. TrmS DNA was successfully isolated and amplified through PCR, and RNA was synthesized through T7 transcription reactions, which was confirmed using gel electrophoresis. Thermal melt assays were performed to confirm the presence of secondary structures, which gave results expected by structure predictions. This allowed for further prediction of the mechanism of interaction between TrmS and the neighboring predicted tRNALeu methyltransferase protein-encoding gene. Alignment of the protein found in S. thermophilus with those of known structure suggests a similar function in methylating the anticodon loop of tRNALeu. TrmS sequence alignments identified conserved loops regions in TrmS across several bacterial species, suggesting potential targets for protein or RNA interaction.

Improving the Mental Health Crisis in Georgetown County Through a Small Business Lens (*Oral Presentation*)
Schaefer-Ortega, Leigha, Biology

Faculty Research Mentor: Pamela Martin, Political Science
The United Nations outlines 17 Sustainable Development Goals to facilitate the growth of the world in a sustainable manner. As an intern through the United Nations Youth Corps Program, I witnessed the importance of a small business giving back to its community as well as the relationship between other small businesses and their role in sustainability within their communities. I researched Georgetown County's mental health crisis and how low-income, food insecurity, and lack of access to health care in the area are all leading factors in the depletion of the community's Good Health and Well-Being (United Nations Sustainable Development Goal #3). Within this presentation, my role as a Graphic Designer will support a business' plan to aid those in need of mental health care. Within my role, I utilize design and branding strategies that advertise and promote the message around mental health with increasing effectiveness based off survey results from community residents. Overall, the examination of the business "Salty Mile" and its plan, better supports the facilitation of mental health and well-being in the Georgetown area.

Implicit Learning of Chinese Radical Position (*Oral Presentation*)
Scholl, Colin, Psychology
Faculty Research Mentor: Andrew Terranova, Psychology
Previous research has shown that young, native Chinese speakers implicitly learn about the positional consistency of Chinese lexical components (He & Tong, 2017). To see if this extends to older, non-native Chinese speakers, we used an artificial writing system based on an ancient Chinese script to systematically control the positional consistency of six lexical components. With a sample of 14 participants, split between those with and without formal Chinese experience, we compared participant accuracy and response time during a recognition test and generalization test to determine whether college-aged, non-native Chinese learners exhibit similar statistical learning effects discovered in Chinese children. Moreover, native English-speaking college students were used as a control group to qualify whether any statistical learning effects observed in the Chinese learners are a result of formal Chinese experience. Based on our results, we contend that Chinese learners are able to effectively generalize the position of the lexical components, but are worse than non-Chinese learners at recognizing known lexical components in their correct position. As a result, we recommend that Chinese college courses increase the use of implicit learning when it comes to Chinese word learning.

Juvenile Spot (*Leiostomus xanthurus*) Age and Growth in Two North Inlet, S.C. Tidal Creeks (*Oral Presentation)*
Schroeder, Lea, Marine Science
Faculty Research Mentor: Juliana M. Harding, Marine Science
Tidal creek geomorphology may influence demographics and growth rates of estuarine-dependent juvenile nekton. Spot (*Leiostomus xanthurus*) was used as a model species to assess potential creek-specific differences in age-at-length and growth rates during 2022. Spot have high fidelity for specific tidal creeks during their first year as well as otoliths that include daily growth lines. Juvenile Spot were collected from two geomorphologically distinct tidal creeks in North Inlet estuary, S.C. during low tide on July 15, 2022. Spot standard length was measured when otoliths were dissected from each fish (n >20 for each creek). Lapilli were mounted on slides so that daily growth lines could be exposed by sanding. The resulting line counts were used to determine the age-at-length and corresponding growth rates for individuals. A coefficient of variation was calculated for each otolith, and only fish with

coefficients of variation <2% were used for analysis. Comparisons of age demographics and growth rates between the two tidal creeks will be presented.

Non-State Actors and International Crisis Outcomes, 1987-2017 (*Poster Session*)
Schubert, Taylor, Intelligence and National Security Studies
Faculty Research Mentor: Jordan Roberts, Intelligence and National Security Studies
This study examines the way non-state actor involvement affects the outcome of international crises. This was tested by looking at a set of international crises from 1987 through 2017. We find that the involvement of a non-state actor in an international crisis is associated with a greater likelihood of the crisis terminating via agreement or unilateral act, and a reduced likelihood of a crisis fading away. Additionally, we find that non-state actors who engage in direct fighting as a part of the crisis are further associated with negotiated and unilaterally-imposed outcomes, but that non-state actors who control territory are less associated with a reduction in the likelihood of a crisis fading away indecisively than other non-state actors.

Striped Blenny Presence and Behavior between Sunrise and Sunset at Oyster Landing, South Carolina (*Oral Presentation*)
Schuetze, Madeline, Marine Science
Faculty Research Mentor: Juliana Harding, Marine Science
Estuaries are important ecosystems to many fishes, including the striped blenny, Chasmodes bosquianus, an abundant intermediate carnivore in Atlantic and Gulf Coast estuaries. Many estuarine demersal fishes including the striped blenny males seasonally occupy and defend nesting shelters. Resident male C. bosquianus tend developing embryos in empty oyster shells at water temperatures above 18°C. Blenny nest shelters were filmed in April-June 2022 at Oyster Landing, North Inlet estuary, South Carolina to quantify lunar and diel patterns of blenny occupancy and behavior. Blenny nest shelter use will be described from sunrise to sunset in relation to water temperature (°C), salinity (psu), depth (m), neighboring demersal fish activity, and adjacent transient nekton activity. Two cameras were situated at two groups of three PVC nesting shelters. Approximately 585 hours of daylight were used to observe fishes on digital video footage. Striped blennies of both sexes were most active from 7:00 to 10:00 AM and 4:00 to 7:00 PM, corresponding to ~ 0.5 hour after sunrise and ~ 4 hours before sunset. Resident males were most abundant between 8:00 and 12:00 PM, and 5:00 to 7:00 PM. On average, one female tended to visit each male's nest shelter each day, with as many as three females visiting one male's nest shelter in a day. Resident males were in their nest shelters for about 90% of the hours between sunrise and sunset. Increasing the number of females depositing eggs in a male's shelter throughout a long spawning season allows for a higher probability that some egg clutches will be produced successfully.

Understanding the Impacts of Storm Surge in Coastal Communities of SC: An Action Research Approach (*Poster Session*)
Shrimp, Cierra, Marine Science
Faculty Research Mentor: Tatiana Height, Sustainability and Coastal Resilience
As flooding and storm surge become more pressing issues that continue to harm communities around the world each year, for this research project, seek to gain insights on the detrimental impacts of flooding in SC communities such as Pawleys Island and St. Helena. Through first-hand interviews, we aim to understand the cost of disaster recovery, community experiences with flooding and storm surge, the effectiveness of government response, and community-informed suggestions for disaster resilience and

mitigation strategies. This study, funded by South Carolina Sea Grant, utilizes a Community-Based Participatory Action Research approach to understanding the impacts of flooding and storm surge in the flood-prone communities such as Pawleys Island and St. Helena. The researchers employ a variety of data collection strategies such as interviews and community workshops to glean insights from flood management professionals and impacted communities. The results will offer a rich, qualitative, data set that provides information on the detrimental effects of flooding and storm surge on the identified communities. The hypotheses are that residents in the low-socioeconomic status area of St. Helena will have a different perception of their experience, and different suggestions for recovery, than the high-socioeconomic status area of Pawleys Island.

The Impact of PRC Language Policies on Minority Languages of China (*Poster Presentation)*
Shoop, Margaret, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
While language is often used as a tool to bring people together and celebrate differences, language can also be weaponized and used to suppress minority groups of people. There are over three hundred unique languages and dialects spoken in Mainland China, with Mandarin Chinese being the most widely spoken of the languages. Mandarin is the official state language of the People's Republic of China (PRC), and it is also the primary language taught in schools across the country. Despite official Chinese policy of teaching Mandarin Chinese alongside local dialects, Mandarin is favored over minority languages. The unequal emphasis on Mandarin is an example of how the PRC uses language as a means to oppress minority groups in China. Previous research has studied the effects of government suppression of language among the Xinjiang Uyghur minority, the Zhuang minority group in the Guangxi Zhuangzu Autonomous Region, Cantonese speakers in Guangzhou, ethnic minority groups in Tibet and Inner Mongolia, and speakers of Miao in southern China. Using a timeline beginning in 1949 with the establishment of the PRC, this work will use a historical approach utilizing case studies and official Chinese government policies to continue to analyze how language policies in the PRC continue to negatively impact speakers of minority languages.

The Influence of Central American Victuals on American Cuisine (*Poster Session)*
Simmons, Christian, Accounting
Faculty Research Mentor: Edurne Beltran de Heredia Carmona, Languages and Intercultural Studies
Since the beginning of their existence, El Salvador, Honduras and Guatemala, have faced many political and social issues that led to migrations to the United States. The majority of these migrations were provoked by violence/civil war and a lack of economic opportunities. Through these extensive migrations, Central Americans brought their food and culture to the United States. Although underrepresented in the media, these countries' food and drink continue to have a major impact on the cuisine of the United States from the expansion of fast-food chains, exportation of coffee, and various festivals held across the United States. For this presentation, I will be exploring the previous research from the University of Texas A&M, Esteban Brenes, and A. Damián Ríos Vargas to demonstrate how violence and economic uncertainty in Central America led to historic migrations to the United States and how the cuisine brought from these Central American countries has influenced the United States.

Mercury Contamination in the Caribbean (*Oral Presentation*)
Smith, Madison, Interdisciplinary Studies Holly Taylor and Katey Zimmerman
Faculty Research Mentor: Russell Fielding, Sustainability

One of the main food sources of the Caribbean Islands are whales and other marine species. Due to human interaction and pollution the marine food chain has become very polluted in Mercury, bioaccumulating in the species that are high on the food chain. There are also several active volcanoes surrounding the islands, meaning that if and when these erupt, mercury is also released into the air via ash. When consumed at high concentrations mercury can be highly toxic to humans. We were able to analyze over 500 samples of hair, volcanic sediment, and whale tissue taken from the Caribbean Islands and the area around them at the Environmental Contaminants Lab at Harvard University. From these samples we were able to see the concentration of mercury in each sample and trap the mercury isotopes. From this data we will match the isotopes taken from the hair samples to the isotopes in the whale tissue and the sediment samples to see which is impacting the countries more. This research gives headway in exploring how pollution on a human and natural level can show the government and the communities that actions need to be taken for the health of the people.

"Generation Mei-Ming": Dual Identity Challenges for Chinese Adoptees in Spain (*Poster Session)*
Solis-Aguilar, Karina, Political Science
Faculty Research Mentor: Edurne Beltran de Heredia, Languages and Intercultural Studies
In 1995, a documentary film called "The Dying Rooms," directed by British directors Brian Woods and Kate Blewett, was released to the public about the conditions in which Chinese children lived in at the adoption centers. China's "One Child" Policy caused for adoption centers to be completely filled, some of the children dying of neglect and malnourishment. This documentary would later go on to cause over 17,000 Chinese, female children to be adopted in Spain in years to come. The generation of adoptees in Spain were called "Generación Mei-Ming," also known as "Generation Mei-Ming."

The individuals travel back to China, thinking that they will be accepted into the culture, but unfortunately, that is not the response they receive. For this reason, the individuals struggle with dual identity, as well as exclusion in both Spanish and Chinese societies. The research explores identity crisis and Chinese communities in Spain from adoptees by studying documentaries, statistics, autobiographies, and media recorded by adoptees of the "Generation Mei Ming."

Physiological Effects of Intervals Duration during Aerobic Exercise with Blood Flow Restriction (*Poster Session)*
Sossaman, John, Exercise and Sports Science
Faculty Research Mentor: Justin Guilkey, Kinesiology
This study will examine the effect of work interval duration on the local metabolic stress and cardiac work during low-intensity aerobic exercise with BFR. Healthy males (18-25 yrs) will complete a graded exercise test to determine WR. Participants will complete three experimental intervals (INT) exercise protocols with intermittent BFR, randomly. All protocols will consist of a 4-min warm-up ([20 W] WU), work INTs (35% peak power), and 1-min recovery INTs (20 W) between work INTs. The work INTs will be: 1) six 2-min INTs (2-min INT), 2) twelve 1-min INTs (1-min INT), and 3) three 4-min INTs (4-min INT). During work INTs, BFR cuffs will inflate to 60% of limb occlusion pressure (LOP) and deflate during recovery INTs. Duration of work INTs and BFR will be 12 mins. Gas exchange, heart rate (HR), and tissue oxygen saturation (StO2) will be collected. StO2 will be averaged over the last 30 sec of WU and expressed as change from WU. Blood pressure (BP) will be taken, and calculated rate pressure product (RPP) will indicate cardiac work. Due to different protocol durations, data will be compared at certain percentage of each protocol duration. Differences between protocols will be determined by a 2-way

(trial x time) repeated measures ANOVA. Significance will be established if $p \leq 0.05$. It is hypothesized that 4-min work INTs leads StO2 to decrease from WU and RPP greater. If the hypothesis is confirmed, training with longer intervals could elicit greater local adaptations, and higher cardiac work.

The City of Conway, South Carolina: Race, Business, and the Untold African American Diaspora, (*Oral Presentation*)
Spennicchia, Ryan, History
Faculty Research Mentor: Aneilya Barnes, History
The purpose of this project is to gather research on stories of the untold African American Diaspora in the town of Conway, South Carolina. Conway is filled with historical significance and plays a key role in understanding southern history, specifically that of Horry County South Carolina. The history of Conway's African American inhabitants can often be overlooked when thinking about local history and this project plans to bring their stories into the light by focusing on sites like The Magic Touch Barbershop, an African American owned business that has been in service to the public for Nineteen years, the Whittemore school, an ex-equalization school for African American children during segregation, and the African American Latimer and Mckeever Funeral Homes, which have been in operation for Ninety-Six and Seventy-Five years. This project will use advanced research methods such as the examination of archive databases and oral history to gain a deeper understanding of what it means to be an African American business owner and what life looked like during times of Segregation in Conway. For example, some of the questions this project plans to answer are, what schooling was like for African Americans of Conway during the period of the segregated South, what hardships have and or still do African American business owners face, and what it means to be an African American in the History of Conway, South Carolina. By examining the Whittemore School and The Magic Touch Barber Shop, Lattimer and Mckiever funeral homes, this project can provide a new understanding of how a sense of community amongst African Americans in Conway, plays a key role in the local history of Conway, South Carolina.

Drinking Habits of Freshmen College Students and the Health Belief Model *(Oral Presentation)*
Surface, Hannah, Public Health
Faculty Research Mentor: Michael Dunn, Public Health
It is well known that first-year college freshmen engage in underage drinking. Ninety-six percent of students have consumed an alcoholic beverage such as beer, wine, wine coolers and liquor such as rum, gin, vodka or whiskey. This study assesses the health beliefs and behavior of alcohol use among college freshmen. Freshman students (n=50) within Coastal Carolina University's Public Health 121 course were provided an electronic survey via a QR code. Roughly 64% of students surveyed reported binge drinking (consuming 4-5 drinks on a single occasion) within the past 30 days. Of those who reported binge drinking, 85.7% did not see binge drinking as any more harmful than consuming 1 drink in a sitting, compared to 41.9% who did perceive it as harmful. Additionally, 62.9% of those who reported consuming an average 6+ drinks in a short amount of time indicated that a vast majority of their finances were spent on their binge drinking habits, compared to 22.9% of students who did not consume alcohol within the past month. Our study focused on freshman binge drinking habits based on the constructs of the Health Belief Model (HBM). Our survey found that 96% of freshmen have consumed an alcoholic beverage, and 88% of students have witnessed alcohol being consumed in an unhealthy way. Even after witnessing the dangers of overconsumption, 60% will continue to drink, despite the health risk.

Generating a Gene Library of Bacteriophage Phayonce (*Oral Presentation)*
Thomas, Kyla, Biology
Faculty Research Mentor: Daniel Williams, Biology
Due to their toxicity for bacterial hosts, bacteriophages have an emerging importance in treating medically significant bacterial species. Generating a gene library of Phayonce, a bacteriophage that infects Mycobacterium smegmatis, allows for systematic analysis of individual function and possible cytotoxic effects on host cells. This work aims to generate a library that contains each of Phayonce's 77 genes in an inducible expression vector. Individually cloned genes can then be introduced into M. smegmatis host cells for subsequent analysis of gene function. Each Phayonce gene was amplified by PCR using gene specific primers. Amplified genes were then assembled into the pExTra plasmid, which contains a tetracycline inducible promoter to drive Phayonce gene expression. After assembly and transformation into E.coli, colonies containing putative plasmids were analyzed by PCR to verify the insert. All 77 genes of Phayonce's genome were successfully cloned into pExTra and subsequent sequencing established they are error-free. Generating a complete gene library of the bacteriophage Phayonce has allowed for all 77 expression vectors to be used in phenotypic analysis of toxicity of each Phayonce gene. Toxicity of Phayonce genes on host M. smegmatis may have medically significant implications on bacteriophage therapies for bacterial species that have shown to be resistant to treatment.

Energy Availability in Female Collegiate Beach Volleyball Athletes (*Poster Session*)
Thomas, Meghan, Exercise and Sports Science
Faculty Research Mentor: Brandon Willingham, Chemistry
BACKGROUND: Energy availability (EA) is the amount of energy available for normal physiological processes and is defined as energy intake (kcals) minus exercise energy expenditure (kcals) relative to fat free mass (FFM). Low-energy availability (LEA; i.e., energy intake < 30 kcal/kg FFM/d) causes Relative Energy Deficiency in Sport, which results in various negative health and performance outcomes. A

recent study reported 81% of the female collegiate athletes examined exhibited LEA. Of the 18-collegiate beach volleyball (BVB) athletes studied, average EA across 7 days was determined to be 12.44 kcal/kg FFM/d. Notably, this is a 7-day snapshot that may not reflect chronic dietary or training patterns. To our knowledge, no study has examined EA across the 10-week competitive season in this population. Therefore, the purpose of this cross-sectional study is to establish the risk of LEA in female collegiate BVB athletes across the competitive season. METHODS: We plan to recruit 18 female collegiate BVB athletes. Each subject will complete an initial visit where anthropometrics, resting metabolic rate (RMR), nutrition knowledge, psychological skills and maximal aerobic capacity will be tested. During weeks 1, 5, and 9 of the competitive season, in addition to initial testing, energy intake (ASA 24) and energy expenditure (GT9X-Link) will be assessed to calculate EA. Countermovement vertical jump height, velocity, and power (GymAware) will be used to assess performance. Results will be analyzed using repeated measures ANOVA and Pearson Correlations. EXPECTED RESULTS: It is hypothesized that LEA will be present and EA will decline as the season progresses.

Utilizing 3D Printing as a Method of Engaging Students and Assisting in the Learning Spatially Challenging Concepts (*Poster Session)*
Thompson, Gregory, Biology
Faculty Research Mentor: Kevin McWilliams, Chemistry
Molecular structures, spatial arrangements, bond angles and stereo (Chemistry) are examples of topics that (Chemistry) students struggle to grasp because it can be difficult to visualize how they work. 3D printing offers a way for instructors to provide students with molecular models to allow them to experience hands-on learning to better understand these concepts. The aim of this research is to design a method of remotely monitoring as well as controlling the 3D printer, and to explore what molecular editing programs could be useful in creating 3D models to print. To address the former, the software, Octoprint, will be used in conjunction with a Raspberry Pi controller and camera. To address the latter, the molecular editor, Avogadro, will be used, in conjunction with other software to produce .stl files which can be utilized by the printer. Our goal for this semester is to have the 3D printer fully operational and to be able to design our own molecules and print them out so that students can have access to handheld versions of complex molecules when learning spatially challenging concepts.

France through the Eyes of African Migrants in Contemporary France (*Poster Session*)
Timmons, Destanee, Language and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia, Language and Intercultural Studies
The impacts of French colonization can be felt worldwide. In the continent of Africa, numerous nations have had their native livelihoods turned on its head during and after the second French colonial empire. During France's regime over several African nations, France has morphed the traditions of the native's people and forever left its mark on the continent. Years after their independence, many African nations such as Algeria, Senegal, and Morocco are still affected by the changes implemented during the colonial era. These changes such as suppressing local culture in favor of French ideals resulted in internal turmoil and rampant corruption in many African nations. Many individuals flee the violence or poverty in search of better opportunities. These immigrants typically flee to their former colonial power due to their shared language. The art of writing has an easy and wide world appeal, allowing readers of any origin to share or read the life, experiences, or ideals of another. Francophone African authors are an important facet of francophone literature as their experiences are told through their novels. Faïza Guène in Kiffe

Kiffe Tomorrow (2004) explores her view of France and what it means to be French. This project seeks to explore the relationship between African migrants and France through literature.

A Fisher Indole Synthesis approach to Phidianidine Analogues (*Poster Session*)
Tingler, Anna, Trinity Ghering, and Samuel Ross, Biochemistry
Faculty Research Mentor: Bryan Wakefield, Chemistry
Naturally occurring products are molecules that are found in the natural world without the aid of humans. Aspirin and opium are famous examples of this classification of molecule. Another example of natural products, that are less known, are the phidianidines. Phidianidines A & B were isolated from a shell-less mollusk, Phidiana militaris. These molecules are comprised of a 1,2,4-oxadiazole ring, an indole, and an aminoalkylguanadio group. These compounds have exhibited striking pharmacological behavior such as that of neutralizing reactive oxygen species and acting as an agonist for the μ-opioid receptor. In recent years, the synthesis of phidianidine analogues has replaced the aminoalkylguanadio group with a biaryl ring system. The purpose of our research is to develop a synthetic route that allows for substitutions on the indole ring and the central aromatic ring. Specifically, our group will focus on a route using the Fischer Indole synthesis methodology. This approach will allow us to make compounds with variations around the indole ring that will then be tested to determine their biological activity.

Provocative, Unorthodox, and Ultimately Transgressive: How the Antinomian Spirit of the Velvet Underground's White Light/White Heat Shaped Heavy Music (*Oral Presentation*)
Torres-Paraizo, Pedro, English
Faculty Research Mentor: Steven Hamelman, English
As 1960s America found widespread anti-establishment sentiment amongst its post-World War II youth, a secular antinomian spirit formed around the many blossoming artists and musical groups of the era. One such group, the iconic Velvet Underground, played a pivotal role in the evolution of rock music as art. Their 1968 sophomore effort, White Light/White Heat, came after the departure of German singer Nico and creative collaborator Andy Warhol from their eponymous debut. Although initially dismissed, the record sparked the rise of countless subgenres of rock--through punk, metal, and experimental--expanding the breadth and complexity of the genre. White Light's sound defied popular music of the era, innovating with piercing, dissonant, and distortion-filled noise. Pairing perfectly with such an unapologetic sound are lyrics that shed light on deliberately taboo themes. White Light/White Heat was a confluence of modern art sensibilities, avant-garde experimentation, and boundary-pushing literature. Its influences are wide-ranging, from the improvisational jazz of saxophonist Ornette Coleman, to the wild, deranged novels of William S. Burroughs; not to mention the group's prior involvement with Warhol. Such a diverse palate of inspirations created an album that was startlingly antinomian for the time and far-reaching in its influence. This paper will examine the ingredients that came together to make such a transgressive work of art and explore the greater impact the record has had on heavy music. Abhorrent by design, provocative in its symbolism, and downright distasteful to many, White Light nonetheless stands the test of time as an essential milestone in music history.

Exploring Relationships of Evaporation Duct Height with Wind Speed and Humidity. (Oral *Presentation*
Vaughan, Alexis, Marine Science
Faculty Research Mentor: Erin Hackett, Marine Science
Changes in humidity near the ocean surface can produce a phenomenon called evaporation ducts, which are nearly permanent features within the marine atmospheric surface layer (first ~100 m above the

ocean surface). These ducts can cause radar systems operating at X-band frequencies (8-12 GHz) to develop positioning errors, for example, by increasing the range of detection or causing holes in coverage. Radars are important to many civilian and military applications such as weather forecasting, air traffic control, and naval ship self-defense. Evaporation ducts are often characterized by vertical profiles of modified refractivity (M) – a measurement of the index of refraction of the air with respect to the curvature of the earth. A feature of this evaporation duct, called the evaporation duct height, has been shown to be a primary driver of these effects on radar performance. As such, investigating relationships between atmospheric variables and duct height can provide insight into the prediction of these effects. It is commonly known that duct height is related to humidity and wind speed, but these relationships have not been carefully quantified. To explore these relationships, numerical weather prediction data of wind speed and humidity from two different field campaigns were characterized by their altitudinal average from the surface to the duct height. Correlation analysis between these atmospheric properties and duct height is performed. Most commonly, duct height increases as this mean wind speed increases, and decreases as this mean specific humidity increases.

A Study of China's Historical and Cultural Impact on Korea (*Poster Session)*
Wade, Tionna, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia Carmona, Language and Intercultural Studies
Although China and Korea have prominent and distinguishing cultures, one does have a more impacting influence over the other. They do have a long history of exchanging knowledge, culture, and resources with other neighboring countries. But Korea's relationship with China is very prominent and goes back decades and decades. Many cultural anthropologists and musicologists study Korean history, and the first place that they usually look are Chinese documents and historical sources. During the 4th century A.D. and onward, many of the Korean kingdoms were greatly influenced by Chinese resources, goods, and culture. Even some of the writing systems, architecture styles, and musical instruments came from them. But Korea was able to absorb this information and integrate it and transform it into its own unique style. This poster explores the relationship between Ancient Chinese history and culture and how it has impacted Korea's culture and customs and their everyday life.

First Responder Crossover and the Effect on Work-Life Balance (*Oral Presentation*)
Walser, Christina, Sociology
Faculty Research Mentor: Danny Malone, Political Science
Crossover stress has an impact on a First Responder's marriage and family. It becomes difficult to achieve a work-life balance while navigating the demands of a stressful and often traumatic career. First Responder mental health has long been a forbidden topic. It is often only spoken in a reactive matter. First Responder mental health needs to be seen as a proactive issue. In this exploratory study, a survey instrument with 10 questions was issued to first responders and their spouses, related to work-life balance and coping with work-related stress. Through some of the preliminary findings, a central theme from the majority of respondents suggests that First Responders do not have proper coping techniques to handle to stressors they experience while on duty. These could lead to spillover into home life which impacts family dynamics. First responder families are unaware of the unseen emotional impact of their loved one's career. Crossover affects the mental health of the first responder, their spouses, and their children and this exploratory study look to address how first responders can alleviate some of the work stress spillover.

Proxima Will Freeze (*Oral Presentation)*
Walters, Avery, Biochemistry and Chemistry and Eric Shultz, Theatre
Faculty Research Mentor: Dory Sibley, Theatre
My Fellows project is a performance that's going to be put on in the Edwards Black Box Theatre featuring the talent and creativity of my peers who are also theatre students. It is a collaborative piece meaning, the dancers, actors, and singers also double as choreographers, writers, and music directors. "Proxima Will Freeze" will question what it means to find yourself as a young woman and how the media has put a disgusting stigma around Lesbianism. Seeing this kind of representation of you can be so incredibly dangerous to a young person's identity and how they progress as their own person. My piece is about a girl in high school who struggles with figuring out who she is. She is in a long, seemingly happy heteronormative relationship when she watches a movie that makes her question her sexual identity while also perpetuating feelings of disgust with herself based on her liking what she's just seen. As her mind wanders from herself, the "good, and bad" in her mind come to life and tell a story through beautiful movement and dance. She's beat down and exhausted from her own self scrutiny and tries to overdose when she's met by all of the people who love her singing to her. In an effort to survive with herself, she accepts that she's gay. Despite all of the new movies representing gay people in a new light, lesbians are still very poorly represented, and when they are, it's raunchy sex scenes only produced for the male gaze. This kind of narration causes so much internal turmoil for young girls and something needs to be done about it.

Developing a Test to Detect Heartworm in Mosquitoes (Poster Session)
Weissmeier, Emma, Exercise and Sports Science
Faculty Research Mentor: Paul E. Richardson, Chemistry
Mosquitos are known to spread numerous diseases throughout communities, including *Dirofilaria immitis*, better known as heartworm. In 2019, The American Heartworm Society reported that South Carolina ranked as the third highest state for heartworm incidents with 5.7% of all dogs tested having heartworm. Primers found in literature, were used to target unique sequences in the cytochrome c oxidase (COI) gene and the mitochondrially encoded 12S ribosomal RNA (12S) gene will be used to detect heartworm in mosquitoes. The primers were verified using an NCBI blast search. Over this past year, our goal has been to develop a PCR test to detect the presence of heartworm in mosquitos. Developing this test can be a valuable asset for proper health protection in our community by monitoring its presence in the area, as heartworm can be potentially fatal to a variety of animals. If successful, this test has the potential to revolutionize the preventative measures against heartworm in animals, as well as better alert the community to a potential threat of heartworm.

Changing the Nation One Image at a Time: How Graphic Design Advanced the American Civil Rights Movement (*Oral Presentation*)
Wells, Arin, Graphic Design
Faculty Research Mentors: Victoria Pickett, Graphic Design and Sara Rich, Honors and Interdisciplinary Studies
The 20th century was an era in American history that was heavily marked by the American Civil Rights Movement, a political movement that swept the nation during the 1950s and 1960s. This movement was the apex of civil rights progress in the western world, and it involved the fight for equality and justice for African Americans during a time of segregation and violent discrimination. A time defined by Jim Crow laws, nonviolent protests and marches, and the emergence of the Black Panther Party, this

specific era of political struggle was elevated by the use of visual communication through the press, political imagery, posters, signs, and many more. This essay will analyze this media and explore how they were able to arouse sympathy and support from individuals across the country, as well as how they altered public perception of racial struggle in the United States.

Media Portrayals of Crime and the Implications of Images accompanying Stories (*Oral Presentation)*
Wilson, Robynn, Communication
Faculty Research Mentor: Pamela Martin, Politics

Media organizations play a vital role in providing the public with information about crime. Crime is prominent in news media and is frequently sensationalized. Pictorials accompanying these stories provide eye-catching visuals and context. However, mugshots stigmatize alleged offenders labeling them as guilty. Public perception is shaped by these images, reinforcing pre-existing stereotypes about who is committing crime. African Americans are overrepresented in news media as criminals, due to organizations associating them with crime. This study analyzes various ethnographic content analyses on images accompanying crime stories in newspapers. In addition, visual analyses were conducted on pictures presented in six newspaper stories from 2019 to 2022. Findings reveal African Americans are overrepresented in crime story images in comparison to their white counterparts. These pictures associate black people with criminal activity and suggest the ethnic group as a whole, are criminals.

An Assessment of Kashmir and Linguistic Plurality in South Asia (*Poster Presentation*)
Yazvac, Tess, Languages and Intercultural Studies
Faculty Research Mentor: Edurne Beltran de Heredia, Languages and intercultural Studies
Kashmir is the northernmost region of India that has been under territorial dispute for centuries. In recent years, China, India, and Pakistan have all claimed to have control of a certain domain of this region. Before and after India gained its independence from British rule, fighting has ensued over which nation claims dominance over Kashmir. Out of this conflict, Kashmir became an epicenter where multiple ancient languages have joined and produced variations around the region. This research explores the linguistic importance of Kashmir by studying its religious personality and its different writing systems and vocabulary. According to a 2011 religious' poll, Kashmir has more than a 60% Muslim population, with Hinduism making up only 28% of the population (<5% make up Christians, Sikh, Buddhist, Jain, and other or not stated religions combined). Kashmiri is the most spoken language in the region and is considered "one of the most the most conservative Indo-Aryan languages". By researching the relationship between these languages, it becomes evident how traditions can morph from the conceived norms.

Aquifer Storage and Recovery Wells (ASRs) (*Oral Presentation*)
Zimmerman, Katelyn, Sustainability and Coastal Resilience
Faculty Research Mentor: Pamela Martin, Political Science
Aquifer Storage and Recovery (ASR) is a water management technique used for storing water underground during periods of plentiful water and recovering that water during dry periods or periods of high demand. Georgetown Water and Sewer maintains multiple ASR wells throughout the county and utilizes them primarily during high tourism months when the demand for water is much higher. ASR systems benefit Georgetown County by supplementing the water supply when needed. Globally, many municipalities are experiencing the pressures of population growth amid finite water resources. ASR is a

viable water management option that can relieve these pressures as well as bring economic and environmental benefits to the communities that utilize it.