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2018 Undergraduate Research Competition Program

Coastal Carolina University

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2018 Undergraduate Research Competition Abstracts (Alphabetical by Presenter)

Applying Factor-Based Investment Strategies in a Quantitative Model (Oral Presentation)

Christian Adams (Finance, Econ)

Faculty Research Mentor: Andrew Weinbach, Finance

Since the development of the capital asset pricing model and the Fama-French three factor model, factor-based investing has garnered increasing support by proving that it can achieve abnormal returns in the financial markets. By utilizing academic research and publications by the investment community, I have developed a factor-based quantitative model that formulates efficient portfolios of equity securities based on a chosen factor-based investment strategies (single-factor, multi-factor, etc.). The analytical tools constructed allow for better-informed and more efficient decision-making when applying a factor-based investment strategy to a specific investment universe.

The Effects of 6 Weeks of Static Stretching and Foam Rolling on Ankle Dorsiflexion and Range of Motion (Poster Presentation)

Mary Frances Aini and Sydney Brown (Exercise and Sports Science)

Faculty Research Mentor: Jason Smith, Exercise and Sport Science

It is well-documented that static stretching can be used to improve range of motion (ROM). Recently, foam rolling has gained popularity to alleviate soreness as well as acutely improve ROM. However, the effect of any long-term use of foam rolling is unknown. Therefore, the purpose of this study is to evaluate the acute and long-term responses to static stretching and foam rolling, separately and combined following six weeks of training on ankle dorsiflexion ROM. Subjects were randomly assigned to one of three groups (static stretching only (SS), foam rolling only (FR), or combination of foam rolling and static stretching (Combo)). Subjects performed three sets of 30 seconds of the appropriate modality for each group. A total of 12 sessions were completed within six weeks. ROM was assessed during one session each week and during the week following the conclusion of the training.

Foreign Born, American Grown (Poster Presentation)

Leah Alford (Digital Culture and Design)

Faculty Research Mentor: Mauricio Castillo, History

This project is about immigration to the US and the laws imposed by the Trump administration, which create a convoluted legal process that results in a stricter migration selection. These new rules are also affecting existing immigrants when the courts apply a fundamentalist interpretation of these laws. For instance, preceding common misdemeanors committed by some of these individuals have led to deportation. I acknowledge the necessity to protect our borders from criminals, but immigrants, right now, are enduring a harsh plight after being established in their communities for years. I am using a digital storytelling platform to tell a story of a Mexican immigrant who got in trouble with the law once when he was young. That one mistake caught up to him later in life. This story mixes real life situations with the current legal context that is encountered by immigrants.

Contextual Analysis of Interactions Between the Public and Law Enforcement as Seen Through Live PD (Oral Presentation)

Hannah Arrington (Sociology)

Faculty Research Mentor: Jason Eastman, Sociology

Previous research shows most reality television is far removed from reality itself, which is especially prevalent across reality-crime shows such as Cops. Recently, these programs shifted towards live

programming and one of these shows, Live PD, is analyzed in this study. I watched 81 hours of this program, documenting the gender and race of both suspects and officers, type of crime, and outcome to compare demographics of those depicted to Uniform Crime Report data. Words and behaviors of officers and suspects were coded for aggression and compared across race, gender, type of crime, and outcome. Comparisons reveal inaccurate portrayals of suspect race in Live PD, but more precise representations of gender, crimes, and outcomes. Although not entirely realistic, these depictions are more accurate than other reality-crime programs. However, Live PD representation of only crimes that are policed, one created through systematic inequalities, leave the audience with flawed perceptions of society.

Spy vs. Spy: Comparative Analysis of Soviet and American Espionage in the Cold War (Oral Presentation)

Edward Barone (Intelligence and National Security Studies, Politics)

Faculty Research Mentor: Joseph Fitsanakis, Intelligence and National Security Studies

International espionage was a major aspect of the global clash between the United States and the Soviet Union during the Cold War. The two competing superpowers routinely used human operatives to access each other state and corporate secrets. Their goals were therefore the same. However, the methods, characteristics and overall styles of Soviet and American espionage were different, reflecting the cultural, technological and political features of the two adversaries. Focusing on known case studies, this paper explores the differences in styles of espionage between the United States and the Soviet Union between 1945 and 1991. In doing so, it draws broader conclusions about the role and contribution of human operatives in the broader dynamics of the Cold War.

Comparison of Manual Assessment vs. Computational Analysis on Courtship Memory in *Drosophila* Alzheimer's model (Poster Presentation)

Breauna Beebe (Biochemistry)

Faculty Research Mentor: Fang Ju Lin, Biology

Human Alzheimers disease (AD) is the most prevalent and lethal neurodegenerative disease. By transferring genes that cause human Alzheimers disease to fruit flies, scientists are able to link function of genes to behaviors. To assess the integrity of learning and memory in transgenic flies, a courtship suppression assay was used. Briefly, naive male flies that were rejected by previously mated females would reduce the frequency of their courtship behavior, and retain this memory for either short-term or long term. Video recording of courtship behaviors includes several courtship behaviors, each behavior scored and analyzed manually. Our preliminary data showed that transgenic Alzheimer flies exhibited both learning and memory deficits. However, the scoring process is laborious and subject to variation among experimenters. Here we adopt a computer analysis program, aiming to validate this computational analysis to make this process more efficient and less biased.

The Effects Of Using Externally-Paced, Velocity-Based Stimulus on Squat performance (Poster Presentation)

Sydney Brown and Halice Schoonover (Exercise and Sport Science)

Faculty Research Mentor: MacGregor Hall, Exercise and Sport Science

To date, no study has examined velocity-based training with external pacing (EP) effects on resistance training. This study will investigate the effects of velocity-based, externally stimulated resistance training on squat power and velocity. Sixteen subjects performed squats on a barbell with a load determined when individuals fatigued at 15-18 repetitions. Subjects completed two sessions, in random order, self-paced (SP) or EP. SP subjects were instructed to perform the exercise as fast as possible. EP sessions were completed with real-time feedback by a metronome set at a specific cadence, derived from the formula $1.0\text{m/s} * 1/d * 60 = \text{bpm}$ ($d = \text{squat displacement}$) which incorporates individual body shape and

biomechanics. Statistics concluded a significant difference between groups. Subjects in EP group produced more power, peak force and velocity, and less deviation from the target velocity of 1.0 m/s. EP may be useful in maximizing resistance training outcomes.

Proposal to Increase and Advance Environmental Education in K-12 Schools in Georgetown County, South Carolina (Oral Presentation)

Nicole Bishop (English)

Faculty Research Mentor: Pamela Martin, Politics

Georgetown County is home to an ecologically rare and diverse variety of ecosystems, as well as an under-served population that could greatly benefit from further environmental education in their schools and community. During a fifteen-week internship as a United Nations Youth Corps Intern in Environmental Services, I researched and analyzed comparative counties with similar statistics to Georgetown to understand how to most effectively implement environmental education into lesson plans into the County school system. This will create a more sustainable community for the students and residents of the county.

Additionally, my research will propose various funding streams to improve environmental education opportunities to include construction of a nature center and improved elementary-aged tours of the landfill, recycling center, and environmental education center in the county. These educational opportunities will provide lasting impacts for sustainable development far beyond Georgetown toward global achievement of the UN Sustainable Development goals by 2030.

Gender Differences in Concussion Knowledge (Oral Presentation)

Maegan Briant (Exercise and Sport Science)

Faculty Research Mentor: Jamie Deitrick, Exercise and Sport Science

Every year 1.6-3.8 million athletes are diagnosed with a concussion in the United States. Female athletes are more likely to be diagnosed with a concussion. Previous research has found concussion knowledge, defined as symptom recognition and understanding the neurological complications that come from the injury, differs between the male and female gender. 875 collegiate athletes (age=19.74 years old, SD=1.88), including 505 males (age=19.91 years old, SD=2.23) and 365 females (age=19.51, SD=1.12), completed a concussion knowledge survey. The independent sample t-test revealed that females scored significantly higher in symptom knowledge ($t(832.87)=-9.2869, p<0.001$) and total knowledge ($t(770.39)=-9.521, p<0.001$). Female athletes are beginning to incorporate the mindset of a traditional masculine model of risk taking and male teams endorse the most negative attitudes about concussions. Improving athlete knowledge of concussions could increase reporting behaviors and result in a safer level of play in both male and female sports.

Middle East Linguistics in the US Intelligence Community after 9/11 (Oral Presentation)

Shannon Brophy (Intelligence)

Faculty Research Mentor: Joseph Fitsanakis, Intelligence and National Security Studies

Foreign languages have always formed a central part of the mission of the United States Intelligence Community (IC). With the change of strategic priorities after the tragic events of 9/11, America's intelligence agencies began focusing largely on the Middle East, rather than on Russia. This was reflected in language prioritization, as Arabic, Farsi, Kurdish and Turkish began to match Russian and Chinese as critical languages. What is the state of Middle Eastern linguistics in the US IC today, nearly 20 years after 9/11? Have American intelligence and security agencies closed the gap in these critical languages since 2001? Can it be said that the linguistic parameters of our national security are being addressed in regards

to threats from the Middle East? Using declassified reports and studies, this research examines the present state of Middle Eastern linguistics in the US IC and draws conclusions about future trends in the field.

Protein Function in the Hangman Phage (Poster Presentation)

Guy Bryant (Biology)

Faculty Research Mentor: Megan Cevasco, Biology

Guy A popular dogma within biology is, “Structure-equals-function”, this ideology was used to analyze protein function for the mycobacterium phage, Hangman. The specific protein function, Terminase, are presented using bioinformatic comparisons through programs such as Phamerator, NCBI BLAST, and Hhpred. These computer programs use comparisons of homologous amino acid chains in similar phages, to determine protein function for the genome. Using this synteny proves to be a much quicker and cost-efficient way to determine protein function for unannotated genomes.

Do Directional Biases Exist in the General Population? (Poster Presentation)

Marissa Cain (Exercise and Sport Science)

Faculty Research Mentor: MacGregor Hall, Exercise and Sport Science

Repeated movements in one direction have been shown to reduce pain and improve performance in people with low back pain. Patients who respond to repeated movements are said to have a directional bias (DB), either in the flexion or extension direction. However, there are no studies that have explored whether DB exists in the non-pathological population. Participants completed three sessions in random order: two single-leg vertical jumps (SL-VJ) on their dominant leg followed by either a control intervention, a flexion movement intervention, or an extension movement intervention, followed by two more SL-VJ. All jumps were assigned a quality score using the Single-Leg Landing Error Scoring System (SL-LESS). The DB was determined by a blind tester by the difference between change in VJ height and change in SL-LESS scores. The results suggest that DB does exist in the general population, and DB is not necessarily the result of an injury.

Understanding Trends in Catch, Size, Abundance, and Potential Ecological Impacts In Ornamental Fishes of the Florida Keys Reef Tract (Oral Presentation)

Juliane Caughron (Marine Science)

Faculty Research Mentor: Jane Guentzel, Marine Science

Coral reefs provide habitat to a wide-variety of reef fishes. The goal of the current study was to evaluate fishery-independent and fishery-dependent monitoring data to assess population and catch trends of ornamental reef fish species in the Florida Keys from 2001-2016. Reef Visual Census monitoring data collected by NOAA’s National Coral Reef Monitoring Program (NCRMP) were used to evaluate population trends in ten groups of ornamental reef fishes. Similarly, marine life harvest monitoring data collected by Florida Fish and Wildlife were analyzed for trends in catch. Our analyses indicated an increase in ornamental reef fish abundance and a decrease in the number of marine life harvests over time. While these trends are promising, this fishery is small and likely not responsible for abundance increases. Instead, population increases may be attributed to a larger-scale trophic release caused by the decline of larger, economically important reef fishes that control ornamental fish.

Phage Discovery: Isolating Two Novel Bacteriophages Hangman and Darko from the CCU Campus (Poster Presentation)

Andrew Chicheste, Emma Lehmann and Megan Majewski (Biology)
Faculty Research Mentor: Megan Cevalco, Biology

Bacteriophages are viruses that infect bacteria and they are the most abundant biological entity in the biosphere with an estimated 10³¹ phages. The SEA-PHAGES program run by Howard Hughes Medical Institute is designed to identify the range of phage genomic diversity. The overall goal of our project was to discover new phages that would contribute to understanding of phage genomic range. We isolated phage from soil samples that were collected from various campus locations. Of the multiple phages collected throughout our campus two were successfully sent for DNA sequencing and imaged by electron microscopy. Of the two phages that were sequenced there was marked diversity. Through the phage discovery process we were part of Coastal Carolina's first contribution to the overall understanding of the genomic diversity of phages.

Industrial Radiation Gauging (Poster Presentation)

Anthony Ciorra (Physics)
Faculty Research Mentor: Wes Hitt, Physics

Radiation gauging is a widely-used industrial technique for thickness measurements in textile and foil manufacturing. Recent literature on the long-term stability of radiation detectors and their susceptibility to temperature, pressure, humidity and other environment factors suggests that the precision and accuracy of beta gauging can be improved with software based corrections. Consequently, said the overall goal of this experiment is to use the attenuation of beta radiation to measure the thickness of a sheet of paper, to examine the effects of environmental conditions are on the efficiency of the detector. This experiment will use a Geiger-Muller tube detector to measure the radiation intensity while temperature, pressure and humidity is monitored continuously. Once sufficient data is obtained, calculations will be made in an attempt to make corrections to the associated efficiency of detector and error propagated to the sample thickness.

Silting Dynamics and Heavy Metal in Georgetown Harbor, SC.

Ariel Clark (Marine Science)
Faculty Research Mentor: Till Hanebuth, Coastal Marine Systems Science

The water front in Georgetown is a location of intense industrial and recreational business and is dependent on seaward accessibility and environmental health. This loop is a former natural path of the Sampit River. River flow redirection around Goat Island to Winyah Bay in 1949 led to massive silting inside this nearly abandoned loop. This accumulation consists of finest sediment and is becoming detrimental to boats being unable to pass in the entrances of the loop. In addition to the silting dynamics, high levels of heavy metal concentrations were found which reflect both the heavy industrial activities in the town as well as the limited environmental policy protecting the area. Grain size analysis (Beckman Coulter) in conjunction with multibeam mapping (Ping sonar system) and heavy metals analysis (XRF) are the multi-methodological approach of this ongoing study.

Cultural Consumption and the Erasure of Histories

Shonte Clement (Digital Culture and Design), Olivia Dimatteo (Communication), and Tori McCray (Intelligence and National Security Studies)
Faculty Research Mentor: Triphi Pillai, English

The British Museum stands as a place where the public can immerse themselves in cultures from around the globe. As an institution of authority on culture, the British Museum, and spaces like it, curate a certain

perspective on what is housed within the space. European colonization throughout much of the world has instituted Christian, Western ideals and beliefs as the dominant narrative in cultural spaces. Colonized cultures feature a mark of “Coloniality” due to these events, thus devaluing their native beliefs and perspectives as well as trivializing, or completely erasing, their histories.

Cultural spaces like the British Museum are relied on by the public to be educational centers of globally cultural enrichment. These spaces boast a cultural breadth that is not their own, but claimed from peoples that have been distanced from their cultural significance. In this way, the public is indoctrinated with a rhetoric that places the dominant culture as the authority on what is culturally valuable. History has seen different iterations of the dominant authority suppressing the majority in many forms. From political suppression in Communist Bulgaria to the socio-political violence in Tunisia, dominant narratives have stifled the voices of those they tyrannize.

Lucky Charms and Cognitive Performance (Poster Presentation)

Kelsey Corbin (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

In the past, several studies have been done to test whether or not the presence of a lucky charm can improve performance (Damisch, Stoberock, & Mussweiler, 2009). Many of the studies, however, look at athletic performance rather than cognitive performance. In this study, participants will be asked to complete a memory game, either with or without a lucky charm. Participants given the lucky charm will either be told the charm has been helpful to others or not told anything at all, to test the hypothesis that those who are told the charm has been helpful will perform better. Participants will also indicate their beliefs in good and bad luck to test the hypothesis that those who initially believe in luck will perform better. Information provided by participants on demographic information will be used to examine the hypothesis that females are more likely to believe in luck.

Does Primary Production Drive the Migration Patterns of Coastal stocks of Atlantic Bottlenose Dolphins (*Tursiops truncatus*)? (Oral Presentation)

Justin Daniels (Marine Science)

Faculty Research Mentor: Robert Young, Marine Science

Of the five coastal stocks of bottlenose dolphins (*Tursiops truncatus*) along the US Atlantic coast, only two are classified as migratory: the Northern Migratory (NM) and the Southern Migratory (SM) Coastal Stocks. The other three (the South Carolina/Georgia, Northern Florida and Central Florida Coastal Stocks) are classified as non-migratory, though potential small-scale seasonal movements have not been investigated. The purpose of this study was to explore potential connections between primary production patterns and the distribution and movements of stocks. We analyzed satellite data of a chlorophyll-a proxy from Aqua-MODIS Climatology reports, compiling monthly averages for January, April, July, October, from 2002 to 2017. We explore questions regarding dolphin migratory patterns, including: (1) why the SM stock migrates, (2) why incursions by the SM coastal stock do not displace neighboring southern stocks, (3) where SM dolphins go during their southern, winter migrations, and (4) why the non-migratory stocks form separate stocks.

Xerogel Composition and Formation Conditions on Electrodes: Working towards Improved Response and Long-Term Stability (Poster Presentation)

Sarah Davis (Marine Science, Chemistry)

Faculty Research Mentor: Drew Budner, Chemistry

Based on literature findings of improved biosensor longevity through incorporation of gold nanoparticles within xerogel modified electrodes, we report on incorporation of Prussian Blue nanoparticles in xerogel.

Through reduction of ferric ferricyanide with organic molecules, Prussian Blue was synthesized, used in the formation of xerogel, and deposited on tested electrodes. Electrode response, long-term stability and sensitivity characteristics were reviewed through comparison of the placement of Prussian Blue within the electrode system, either with or below the xerogel. Electrode and xerogel conditions were considered within the study to determine best practice for xerogel formation. The integration of such findings will contribute to enhanced future development of biosensors, improving their ability to target a variety of clinically relevant species.

As the Tide Turns: Tidal influence on Relative Abundance of Shark Species in Winyah Bay, SC
(Oral Presentation)

Erin Dempsey (Maine Science)

Faculty Research Mentor: Daniel Abel, Marine Science

A longline survey was conducted from 2016 to 2017 in Winyah Bay, S.C. at Mother Norton shoals and Sandbar city. This study was interested in determining the influence of tides on the movement of sharks. There were 311 sharks caught during this period of which 288 were caught during high tide and 20 were caught during low tide. A total of 166 sharks were caught during slack water and 144 were caught during ebb or flood tides and a majority of individuals caught were immature. *Carcharhinus plumbeus* and *Rhizoprionodon terraenovae* were the most abundant at both locations and had the highest catch during ebb, flood, and slack water. Since there were a greater number of sharks caught during high tide it is suggested that many sharks move into the bay to feed or as a mechanism for conserving energy.

Land Usage, Population Census Data, and High Poverty Rates in Georgetown, SC and the ability to apply for Federal and State Funding (Poster Presentation)

Alexis DiMarzo (Politics)

Faculty Research Mentor: Pamela Martin, Politics

Georgetown County, SC, was a thriving county due to the timber industry and the high demand for steel during both World Wars but has suffered greatly due to industries leaving the county. Currently, Georgetown in comparison to the nearby counties of Charleston and Horry, ranks relatively high in their poverty status set by the Census Bureau, ranking far above the national average for population below the poverty line. The county lacks access to federal and state funding as a result of skewed population numbers. The county land usage further shows large discrepancies in the population count and income levels. Paired with the UN Sustainable development goals and the case study of The Southern Georgetown County Library Project on how civic needs were matched with the counties ability to apply for grants and state fiscal funding this study will suggest the steps on establishing a thriving collaborative community for generations.

Female Legislators, “Women’s Issues” and their Party Alignment (Oral Presentation)

Nicole DiMarzo (Politics)

Faculty Research Mentor: Kaitlin Sidorsky, Politics

Women’s representation in the United States government has been noticeably stagnant in the last decade. Yet the women’s movement that began in 2017 has sparked a renewed interest in public service among women at the local, state, and national levels. The increased interest in public service has particularly shined a light on the ever-growing gender gap for party affiliation where women are much more likely to

register with, vote for, and run under the Democratic Party. There are still a considerable number of women, however, who run and serve as Republicans. In this paper I explore how moderate female Republicans serve in their state houses on women's issues. Women's issues are deemed to be education, healthcare, equal pay, and reproductive rights. This study will provide an analysis of female legislators in Colorado, New York, South Carolina, and Wisconsin to explore how ideology and gender affect their policy views.

In a State of Serenity (Oral Presentation)

Ramsey Diven (Arts)

Faculty Research Mentor: Aneilya Barnes, Arts

A portrait can project the emotions an individual feels through the manipulation of both style and medium. This project will demonstrate the emotions that the artist's favorite song, This is Love by Ruth B, evokes via the creation of a self-portrait using the medium of watercolor. Inspiration for style and technique will be drawn from multiple artists, such as Cayce Zavaglia, Pierre-Auguste Renoir, Agnes Cecile, and Noel Badges Pugh. Looking at various artists who interpret portraiture in distinctly different manners will guide the formation of this interpretation. Often when working in portraiture an artist can become consumed with trying to mimic the subject's exact appearance. This portrait, however, will illustrate that by focusing on manipulating the medium, instead of using a facial expression to convey emotion, a connection will be formed between appearance and the inner self.

Gender Representation in TV and Film (Oral Presentation)

Amelia Dobbs (Music Theater)

Faculty Research Mentor: Adam Pelty, Music Theater

Gender representation across all occupations in the U.S. and the subsequent gender pay gap is a highly discussed topic today. This study investigated these issues in the TV and film industries. Pulling from Human Capital and Feminist theory this project used a post-positivist methodology to 1) collect data from primary and secondary sources and 2) administer a survey to college students on the topic. The research questions were: Compared to recent statistics, do college students recognize a disparity between gender representation in the media? Are they aware of a gender pay gap specifically in this industry? In the country? The survey results allowed me to explore how male and female college students view gender representation in TV and film. Results were similar among various samples; however, there was a correlation between answers about the gender pay gap and the gender of the participant.

Comparison of Novel Back Squat Technique to Traditional High-Bar Parallel Back Squat (Oral Presentation)

Douglas Dowell (Management)

Faculty Research Mentor: Chad Smith, Exercise and Sport Science

A research study focusing on the rotational forces produced during two types of back squat techniques. Despite the National Strength and Conditioning Association's position statement on the high-bar back squat stating that the knees should be allowed to move slightly beyond the toes (Chandler and Stone, 1991), confusion still exists about the proper technique. This confusion has led to several studies comparing the biomechanics of the high-bar back squat when the knees are restricted from moving beyond the toes to the biomechanics of the back squat when the knees are allowed to move beyond the

toes. There is a way to perform the back squat with minimal anterior movement in the joints; the Novel Back Squat[®] (TF365 TrueForm Squat demonstrates minimized anterior movement of the knees and torso). The purpose of this study is to compare the hip, knees and back across the traditional high-bar back squat and the torques produced.

Movement Directional Bias Effects in the Healthy Vs Injured Population (Poster Presentation)

Kaelea Drake (Exercise and Sport Science)

Faculty Research Mentor: MacGregor Hall, Exercise and Sport Science

This study analyzed the force production and coordination effects of flexion and extension biased exercises within subjects with and without lower back pain. To do this, subjects were asked to hop three separate times using their dominant leg with their hands on their hips while on a force plate and being filmed with a high-speed camera so the height and quality of their jumps could be recorded. After this they were asked to lay flat on their backs for five minutes then perform either the extension or flexion exercise based on randomization. Subjects then repeated three jumps and were asked to give feedback on how they felt. After this, they laid down again for five minutes before completing the opposite exercise of the first round and jumped three more times before asking what their preference was. Results will be discussed.

Pain Expectations and Perception in Chronic Pain versus Non-chronic Pain Subjects (Poster Presentation)

Lauren Durant (Exercise and Sport Science)

Faculty Research Mentor: MacGregor Hall, Exercise and Sport Science

Chronic pain is becoming an epidemic all over the world. In the US alone, 50-100 million adults report chronic pain conditions and these conditions cost \$550 to \$635 billion annually. In this study, we are examining if chronic pain patients are more sensitive to general pain in another area of the body.

Local Hydrodynamic Controls on the Distribution of Bedforms in the Santee River Delta (Poster Presentation)

John Durica (Marine Science) and Till Hanebuth

Faculty Research Mentor: Till Hanebuth, Biology

The Santee River Delta is located on the coastal plain of central South Carolina's Atlantic coast, mainly in Georgetown County. This river system has been modified extensively in the past for rice plantations as well as hydroelectric dams. However, the Santee has remained relatively void of modern infrastructure and development. The river system can be divided into three geomorphological zones where the lower Santee River flows southeast and then splits into the North Santee River and the South Santee River. In each of the three zones, major morpho-sedimentary features can be found dominating the riverbeds known as bedforms. Bedforms are 3-dimensional features whose developmental geometry reflects bottom flow strength, grain size, and sediment availability. This study investigates the distribution of bedforms as a result of local bottom current, riverbed morphology, and overall river form via shallow seismic data, multibeam data, and grain size analysis combined with mathematical relationships.

Local Hydrodynamic Controls on the Distribution of Bedforms in the Santee River Delta (Poster Presentation)

Josh Dusci, Marine Science

Faculty Research Mentor: Erin Burge

Aquaponics is the combination of aquaculture and hydroponics that grows fish and plants in a single closed-loop environment. The purpose of this project is to demonstrate the effectiveness of fish stocking

density on vegetable production within an aquaponics system. This was demonstrated using four 75-Liter tank aquaponics systems. Two of these tanks were less densely stocked (10 goldfish/tank) and served as a control. The other two tanks were more densely stocked (50 goldfish/tank) and served as the treatment. Each 75-Liter tank was fitted with the same sized grow bed (53cm x 41cm x 13cm), and each bed contained the same type and number of seeds of Buttercrunch Lettuce (12 plants/bed). To confirm the demonstration, wet weight of the lettuce was measured and compared between the two systems over the same 5-week time span.

Establishment of an In Vitro Cell Culture System to Study Neurodegeneration in *Drosophila melanogaster* (Poster Presentation)

Leland Earp (Biology)

Faculty Research Mentor: Fang-Ju Li, Biology

The formation of plaques in the brain from amyloid- β 42 ($A\beta$ 42) are believed to give rise to Alzheimer's disease (AD). $A\beta$ peptides are produced from proteolytic processing of the transmembrane $A\beta$ precursor protein (APP). *Drosophila melanogaster* have been used as the model organism for understanding the neuropathology of AD. Our goal is first to establish a primary cell culture model from *Drosophila* brains, which can later provide a platform for pharmacological screening in vitro. Cells were isolated from a transgenic line of *Drosophila* that carry over-expressed human $A\beta$ 42 peptides. Immunofluorescent staining was performed on the brain and primary cell culture identifying the location of $A\beta$ 42. Cell viability and morphology are used to validate this in vitro model. An array of assays were performed to determine the toxicity of $A\beta$ 42 peptides as well as other effects on adult *D. melanogaster*

Expatriates for AvaLaw: A Case Study on Consulting in Spain (Oral Presentation)

Emily Eastham (Marketing, Management)

Faculty Research Mentor: Peter Gasca, Marketing

This case study is derived from an international consulting project through the Community and Business Engagement Institute (CoBE). This team was tasked with providing visibility techniques for American individuals or businesses who would be interested in moving to Spain for Avalaw, a law firm that specializes in real estate, investment, and immigration law. The project will be presented on March 9th, in Barcelona, Spain, making it the first international presentation performed by CoBE. Throughout this project, we were able to gain knowledge in market research, segmentation, visibility and marketing. Also by working with a client overseas, we were able to acquire skills in traveling abroad, understanding cultural differences, and organizing an international trip. We believe by sharing our successes and failures, audience members will be able to apply our experiences to their own travels.

Racial Disparities: The Effects on Citizen Perceptions and Interactions (Oral Presentation)

Madison Fama (Sociology)

Faculty Research Mentor: Deborah Perkins, Sociology

In collaboration with the Conway, South Carolina police department, the purpose of this research was to assess citizens' interactions with and perceptions of their local police. Recent literature suggests people of color have more negative views of the police and more unwanted contact. Through the use of a cross sectional survey design, the effects of race on citizen perceptions and interactions with police were examined within the Conway community. Further analysis of this research displayed that there are different perceptions and interactions with the police department between minority citizens and white citizens. Minority citizens are less likely to trust police, perceive that the law is not applied equally, they

are more commonly stopped by police in multiple settings, and they are more likely to be arrested. The data collected from this research was valuable to the police in order to improve the relationship between citizens and the police department.

The Clean Air Act and Its Impact on Ground Level Ozone Pollution Levels in Los Angeles, California (Poster Presentation)

Rebecca Ford (Marine Science)

Faculty Research Mentor: Angelos Hannides, Marine Science

Ozone (O₃) occurs as a photochemically produced pollutant in the Troposphere and its emission and concentration is regulated by the Clean Air Act (CAA) of 1970. The Los Angeles area is an example of how O₃ can be a public health hazard, and taint a city's aesthetics and quality of life through photochemical smog. This study was conducted to observe the overall effectiveness of the CAA. I explored daily O₃ concentrations from 1980 to the present at three air quality monitoring stations in LA from the AirData database of the U.S. Environmental Protection Agency. National O₃ standards were only exceeded twice at one station throughout the study period. While the average O₃ concentrations have been well below the national standards since 1980, they have remained relatively constant, while variance about these averages has steadily declined, indicating a positive impact on O₃ concentrations in the LA metropolitan area.

An Intuitive Perspective on the Second Derivative Test for Maxima and Minima of Functions of Two Variables (Oral Presentation)

Alex Foster (Math)

Faculty Research Mentor: David Duncan, Math

The second derivative test for maxima and minima of functions of two variables often goes unexplained in Calculus III courses, but examining the family of normal curves on the surface of such a function provides insight into the workings of this test. Using linear algebra, we will show that the second derivative test for functions of two variables can be understood in terms of the second derivative test for functions of a single variable applied over the family of normal curves.

Who am I?: Discovering Identities Constructed by Adopted Children (Oral Presentation)

Megan Foster (Communication)

Faculty Research Mentor: Deb Breede, Communication

A person's identity is constructed by various factors but relies heavily on the influence of parental figures and environment. This study analyzes the effect of family influence and individual experiences on how adopted children establish their own personal and ethnic identity. In-depth interviews were conducted with participants to gain better insight and to collect various personal accounts. Following the interviews, it became clear that family influence does play a major role in developing personal identities for adopted children; however, each person develops preferred identities. Identity is adaptable for adoptees and they move fluidly through various cultural, traditional and situational identities as often as they feel necessary.

Concentration of Microplastics in *Crassostrea virginica* living in Natural Environments (Poster Presentation)

Karl Froscheiser (Marine Science)

Faculty Research Mentor: George Boneillo, Marine Science

Plastic production has been rising, due to the endless materials it provides. This is an issue for marine environments, because plastic materials enter as a nonpoint source pollutant and dissolve into microplastics. Filter feeding organisms are affected because they cannot differentiate the particulates from

their own food. These organisms hold intrinsic value in marine ecosystems water quality, and are affected when ingesting microplastics. This study focuses on the concentration of microplastics in *Crassostrea virginica*, which is the most common oyster on the east coast. Uniquely this study looks into the concentration of microplastics in *Crassostrea virginica* samples from protected environments in Myrtle Beach, South Carolina. This study will utilize a potassium hydroxide to dissolve the tissues of *Crassostrea virginica*. Microplastic concentrations of samples will then be compared to their sizes, and water column. Microplastic concentration data from the protected marsh samples will be compared with other microplastic uptake studies.

Social Contact and Misbehavior in an Elementary Classroom (Oral Presentation)

Alexis Gagnon (Elementary Education)

Faculty Research Mentor: Richard Costner, Elementary Education

In the average elementary classroom, students are arranged into small groups, rows, or long tables based on the teacher's discretion. Regardless of the arrangement, the amount of contact students have may be related to the frequency of misbehaviors they exhibit. Students in one fourth grade classroom were observed while working in assigned small groups, and again when working individually, dispersed throughout the classroom.

I made 6 observations, of 30 minutes each and recorded the instances of student rebellion, cooperation, and on task behavior. I also made scans every five minutes (6 scans) to identify the number of students who were off-task at that moment. This figure was expressed as a ratio, with the number of off-task students divided by the total number of students. Studies like this are important for understanding more about the role of particular seating arrangements on student's propensity to misbehave.

Externally Paced Velocity Based Training (Poster Presentation)

Trey Giles-Sallazzo (Exercise and Sport Science)

Faculty Research Mentor: MacGregor Hall, Exercise and Sport Science

Velocity based training has shown benefits of injury prevention and improved outcomes for each individuals fitness goals. Although, Velocity Based training really relies on the data gathered by the end of the study due to the need for exercise feedback. However the externally paced velocity training has shown improved neural and cortical drive which helps people improve the outcomes of their ultimate goals even though cadences have not really been relevant in previous research. This study is a crossover study in which the subjects go for four weeks exercising in their given groups (.45 m/s, 1 m/s and self-paced) and after the fourth week the subjects undergo a reassessment with the force plate to see if they have improved and then the subjects randomly switch to different groups. The subjects cadences were determined based upon the equation: $Cadence = 1 / \text{displacement (m)} * \text{velocity (m/s)} * 60 \text{ seconds}$.

Applying Best Practices to a Family-Owned Restaurant: A Case Study (Oral Presentation)

Emily Graham (Management, Accounting)

Faculty Research Mentor: Leann Mischel, Management

Family businesses come with a set of unique advantages and challenges. To optimize the inherent advantages and overcome the challenges, family business "best practices" have developed over time. However, each business varies, and what works for one business may not work for another. In this case study, I consulted with a family-owned restaurant in the northeastern United States to learn from its successes and suggest steps to take moving forward. My focus largely centered on family-business succession planning, but I also investigated other topics, including written constitutions, employment

policies, and advisory boards. The purpose of the study is not to provide exact solutions but to shift owner's attention to certain areas for improvement.

Water Quality of Two Coastal Areas on the East Coast (Poster Presentation)

Issia Grate (Marine Science)

Faculty Research Mentor: Diane Fribance, Marine Science

Water quality of samples from rain water, lake water, and local bodies of water on the East Coast at Wallops Island, VA and Myrtle Beach, SC have very similar properties because of their proximity and effect on one another. Rain has a direct impact on the bodies of water it enters, causing fluctuations in pH, dissolved oxygen, conductivity, and many other quantitative and qualitative parameters. The relationship between rain water, lake water, and ocean water, while not insignificant, is not drastic in that a singular rain event usually does not cause a statistically significant deviation in environmental testing parameters. Dramatic deviations in test results can be attributed to abnormal environmental events, such as acid rain. Results from this data allows VA and SC to ensure its tenants of its dedication to continuously monitor its surface water quality and more generally, the impacts on the surrounding environment.

Assessing the Behavioral Change in Aggression of Male Sand Fiddler Crabs (*Uca pugilator*) After Temporary Amputation or Autotomization of a Claw (Poster Presentation)

Kiirah Green (Marine Science)

Faculty Research Mentor: Eric Rosch, Marine Science

Fiddler crabs are important detritivores of marsh ecosystems and their abundance in a marsh has been linked to ecosystem health. This project focused on how aggression levels between male sand fiddler crabs (*Uca pugilator*) changed after amputation of a limb or claw. Aggression was assessed through shelter competition during a perceived threat. Dominant males had a limb amputated and the trial repeated shortly after. The results showed a higher success rate for intact males despite being them less dominant in initial trials. Amputee behavior was consistently submissive, characterized by lack of movement, not attempting to enter the shelter, and trying to escape the shelter or testing arena. These results imply that male fiddler crabs exhibit drastic decreases in aggression levels after loss of limb. Further investigations should try to elucidate the benefits of aggressive interactions when the loss of a limb may result in significantly lower future competitive success.

Music and Student Perceptions (Oral Presentation)

Malik Greene (Psychology)

Faculty Research Mentor: Terry Pettijohn, Psychology

The effects of music, specifically the lyrical content has been supported to influence cognition in individuals. Helping behavior was measured following exposure to aggressive rap lyrics to create an association between ones' helping behavior and the music one may be exposed to socially. Participants were exposed to different musical selections, following this exposure, the helping behavior one exhibited when influenced by a presented helping scenario was measured. Participants were given scenarios in which they could donate or volunteer assistance to an organization following a music exposure. The lyrical content of several songs was analyzed through this study, the lyrical content and themes of music may have a connection between how likely one is to help others. The hypothesis of this study is that those exposed to rap music with aggressive lyrical content as well as aggressive, racial and sexual themes will be less likely to help others in social settings.

The Effect of Increased SST on Tropical Cyclone Strengthening (Poster Presentation)

Tyler Gregory (Marine Science)

Faculty Research Mentor: Craig Gilman, Marine Science

Data shows that for the past hundred years; average global sea-surface temperatures have been increasing. The increased surface temperature causes increased heat and moisture to enter the atmosphere, allowing more ideal conditions for tropical Cyclone formation. The latent heat stored in surface water serves as the energy for the cyclone to increase its wind speed. With an increased supply of energy, one hypothesis is that hurricanes are strengthening at a more rapid rate recently compared to previous decades. Data for this study was collected from the National Hurricane Center, from 1893-2017, all tropical cyclones in the Atlantic. Using that data, this study found evidence that suggests hurricanes have been increasing in strength more rapidly in the last hundred years, specifically the amount of days for a hurricane to strengthen from a Category 1 to a Category 3.

Seasonal *Perkinsus marinus* Prevalence and Intensity in North Inlet, SC *Crassostrea virginica* (Oral Presentation)

Danielle Guy (Marine Science)

Faculty Research Mentor: Juliana Harding, Marine Science

Parasites depend on their hosts for survival but have negative effects on their hosts. The Eastern oyster is a host to *Perkinsus marinus* or Derm. This protozoan parasite reduces oyster growth and increases oyster mortality. The relationship between *Perkinsus marinus* prevalence and intensity in *Crassostrea virginica* at four sites in North Inlet, SC was examined. Quarterly collections were made between 12/2016 to 12/2017, spanning the seasonal annual water temperature range. Mantle tissue was removed after oyster shell lengths (mm) and wet weights (g) were recorded. *Perkinsus marinus* hypnospores were quantified in oyster mantle tissue. Parasite prevalence, mean sample intensity, mean infection intensity, and host condition index for each site/season combination will be discussed. Historically, warm water temperatures and high salinities, cause higher parasite prevalence and intensity. Understanding when *Perkinsus marinus* infections are highest is important in understanding the negative effects it has on its host, *Crassostrea virginica*.

Sand Compaction and Ghost Craw Burrows: An Analysis of Morphology and Volume

Bailey Harding (Marine Science)

Faculty Research Mentor: Eric Rosch

Human activities on and near beaches have major effects on beach organisms, particularly ones that construct burrows. Ghost crabs, *Ocypode quadrata*, are a well-described indicator of beach health, however, there is little known about how sand compaction, affects the construction of their burrows. Sand penetration depth (PD) and burrow morphology were measured on three wave-dominated beaches along the South Carolina coast. Two beaches had high levels of human traffic, and one beach was private with restricted access. Burrows were randomly chosen from the dune and backshore areas. Plaster of paris was mixed and poured into the burrow and left to set for approximately 45min to 1 hour. The PD of the burrows was found to correlate with burrow shape. However, the PD did not correlate with volumes or lengths. Complex burrow morphologies displayed a bimodal distribution in relation to PD, while simple morphologies correlated with intermediate levels of PD

Behavioral Differences in Meerkats (*Suricata suricatta*) in Captivity (Oral Presentation)

Taylor Hayes (Marine Science)

Faculty Research Mentor: Matthew Murphy, Psychology

Animals captive in zoos or aquariums may exhibit behaviors that differ from behavior observed in their natural habitats. Meerkats (*Suricata suricatta*) are commonly found in zoos, and looking at the relationship between zoo visitors and meerkat behavior can give indication of their welfare. We observed

the meerkats at the Chattanooga Zoo in 15-second intervals using focal scan sampling of typical and proximity behaviors at different times based on the Chattanooga Zoo's general visitor count. The results and implications will be discussed during this presentation.

The Way: Applications of Taoism to Global Environmental Governance (Oral Presentation)

Nakkara Hess (Intelligence and National Security Studies)

Faculty Research Mentor: Aneilya Barnes, Anthropology

Despite increased globalism, humans have only recently begun to understand the impacts that they and their forebears have had on the planet. This presentation argues that, in order to address and overcome these problems of environmental governance, it is necessary to proceed with a holistic view of existence. In that, I propose that the Taoist understanding of creation and existence provides universal principles to ethically and effectively work toward the United Nations' Sustainable Development Goals (SDGs); goals that the entire world has adopted. If applied, these ancient ethics could both improve the perceived relationship between the planet and individuals and provide guidelines for the conduct and application of SDGs.

Art, Ethics, and Activism: Historical Examples and Future Possibilities

Melissa Hydock (Art History) and Joshua Parsons (English)

Faculty Research Mentor: Tripti Pillai, English

This paper will address how poetry is used to remember the past of African Americans and their protests. Poetry is history in and of itself. It is like any other historical source. It is not only an art form, but a form of protest, that can recount history and the feelings and ideas of events in a way that stirs people and shows them the injustices of the past. What we aim to accomplish from this research is to give justice not only to the victims in Jay Bernard's poetry, but of those who weren't given the opportunity to have a voice. We want to show how poetry is a form of artwork that is able to create peaceful forms of protest. How it is a way to protest that will cause an exchange of ideas and bring awareness to the situation at hand, without having to involve violence to get the point across. We want to show how the use of this form of protest can cause not only everyday citizens, but intellectuals and people of power, to consider the crisis at hand (that has repeatedly happened to the African American race) and do something if they have the power to help change it. We want to show what the effects of one person such as Jay Bernard, caring passionately about his race, can do.

Using Experimental Archaeology as a Tool for Education (Oral Presentation)

Sydney James (Anthropology)

Faculty Research Mentor: Aneilya Barnes, Anthropology

Experimental archaeology, a field of archaeology focused on forming and testing hypotheses through reconstruction and experimentation, has proved increasingly useful as a way to improve understanding of the archaeological record. While the research aspect of experimental archaeology has been recognized, there is a great deal more that could be done to use the discipline for furthering education. By employing hands-on techniques, experimental archaeology has the unique capability of displaying information in a way that can reach a variety of audiences, both inside and outside of academia, and has already proven useful for improving student interaction in the classroom. This is a comparative study to explore the ways in which European models of experimental archaeological research can be applied to enhance aspects of education in the United States.

Fans and Fighters: Why Choose a Boxer? (Oral Presentation)

Kyle Johnson (Communication)

Faculty Research Mentor: Wendy Weinhold, Communication

As combat sports work to return to the center stage in the sporting world, athletes face struggles that athletes in other sports usually do not. Boxers have to promote themselves to continue to stay in the public sphere and grow a fanbase to continually support them, through win or loss. This research paper examines to determine why fans choose to support one boxer over another. The research uses interviews with boxing fans and boxers to understand how boxers develop and cultivate a fanbase. The research concludes that confidence and politeness are key traits for shaping a boxer's appeal.

The Composition of a Theme and Episode of an Unfinished Mozart Flute Concerto (Oral Presentation)

Brenna Kallod (Music)

Faculty Research Mentor: Donald Sloan, Intelligence and National Security Studies

Wolfgang Amadeus Mozart wrote many works, but only a few for the flute, including an unfinished concerto containing only the second movement – Andante in C for Flute, K315). The goal of this research will be the composition of a first and third movements situated within the theoretical analysis of Mozart's works, but this project will focus on the completion of a theme and an episode of the third movement. Specifically, it will analyze form, motivic elaboration, phrase length, key relations, time signatures, and tempo markings of the third movements in all of his instrumental concerti, piano sonatas, and string quartets. Within this context, it will consider the formal and stylistic approaches to the third movements of his concerti and, thus, be a plausible composition of the third movement to Andante in C, K315, providing a new interpretation of Mozart's concerti.

The Failure of Disease Surveillance in the 2014 Ebola Case (Oral Presentation)

Kelsey Kerouac (Intelligence and National Security Studies)

Faculty Research Mentor: Richard Aidoo, Politics

The 2014 Ebola outbreak originating in West Africa provided a direct threat to United States National Security. One of the main operational flaws revealed during this health epidemic was spotty disease surveillance networks. By examining the 2014 Ebola case study of Guinea, Liberia, and Sierra Leone it exposed that these West African nations were not equipped with the same networks of other African nations that were able to contain outbreaks in the past. By comparison, in previous years Uganda was prepared with robust disease surveillance systems that allowed for suspect cases to be tested and reported quickly, so that information could spread through the surveillance network in the country as fast as possible. Based on these increased prevention measures public-health campaigns were able to be implemented right away. Due to operational failure in their disease surveillance networks, the 2014 Ebola epidemic became a major global, and United States, security threat.

Conservation Cape: Wildlife Conservation through Photojournalism (Oral Presentation)

Shelby Ladewig (Biology)

Faculty Research Mentor: Michele Barthelet, Biology

Wildlife conservation is the practice of protecting wild plant and animal species and the habitats in which they reside. Photojournalism is how meaningful stories are given life through the usage of interwoven vivid lines and pixels with or without words. I used photojournalism to help spread awareness of ongoing conservation issues in Cape Town, South Africa. With the guidance of AfriOceans Conservation Alliance founder, Lesley Rochat, this research aimed to understand the flora and fauna of Cape Town, and to inform and teach others about the conservation of our environment.

Progress towards Antioxidant Phidianidine Analogs (Poster Presentation)

David Laws (Biochemistry)

Faculty Research Mentor: Bryan Wakefield, Chemistry

The phidianidines are a bioactive group of compounds that consist of three regions: an indole, a heterocycle and a linker. Previous research has shown that alteration of the linker and indole regions results in different bioactivities. Specifically, a biaryl linker was found to be neuroprotective against reactive oxygen species. Reactive oxygen species are implicated in various neurodegenerative diseases such as Alzheimer's. We aim to produce a variety of phidianidine analogs with the biaryl linker region that have varying indole groups to increase neuroprotective activity. The challenges with synthesizing this side chain lay in the final step which is cyclization to form the hetero cycle (1, 2, 4-oxadiazole ring). Herein we report our various and future approaches to completing this cyclization in good yield.

Understanding the Long- Term Population Dynamics of Bacteriophages Found on Students (Poster Presentation)

Giovanna Leone (Exercise and Sports Science)

Faculty Research Mentor: Paul Richardson, Chemistry

Bacteriophages are highly specialized viruses that only infect bacteria. Over the last decade, a great resurgence of research has been undertaken to study the use of these viruses in controlling antibiotic resistant bacterial infections. Current and previous studies by this lab have shown that bacteriophages specific for *Staphylococcus aureus* and *Escherichia coli* have been isolated and identified within the student population at Coastal Carolina University. Nothing is known about the population dynamics of these viruses on their human hosts. Students have volunteered to be swabbed ever month, over the course of an academic year, to detect and determine bacteriophage presence on the students. This study will try to determine if there is a unique dynamic to the bacteriophage presence on the student population and try to elucidate the factors that might influence its presence on its human hosts.

Oppression & Faith in the Ivory Tower: Differing Discourses and Cross-Cultural Communication (Oral Presentation)

Donna Lewis (English)

Faculty Research Mentor: Emma Howes, English

The secular Liberal Arts Community is often at odds with the Christian Community. Both foster not only morals and well-rounded education, but also anger and mistrust between each other. These misconceptions and anxieties have driven us apart and caused chaos in the classroom that detracts from the well-rounded, objective education that a student expects to receive in any college classroom. This paper will be about the breakdown of cross-cultural communication and education in the classroom caused by disrespect, anxiety, and differing discourses between the Literary Sponsor (Doctor) and Literacy Learner (student). This paper chronicles personal experiences with input from Gee, Brandt, Donehower, a well-known apologetic theologian named Ravi Zacharias, and others. Through this evidence, I want to provide awareness and to promote mutually respectful cross-cultural communication for future Sponsors and Learners of all discourses in the hope that the classroom will be safer place for all.

Terror Management: Decreasing the Negative Stigma on Mental Illness (Oral Presentation)

Ali Loe (Psychology)

Faculty Research Mentor: Terry Pettijohn, Psychology

As mental illness is an ongoing issue in the United States, the effort to eliminate the negative stigma on individuals with mental illness should be in the spotlight. This stigma can make it hard for those individuals to find housing, find jobs, or to be an active member in society. In this study, college students

were used to test the prediction that using terror management to make an individual more aware of death will result in less acceptance of people with mental illness. Using terror management to make an individual think about their future will result in higher rates of acceptance of individuals with mental illness. Results and implications of this study will be discussed in the presentation of this research.

Establishing Testing Methods in Cognitive Tasks for Leopard Geckos (*Eublepharis macularis*)

(Poster Presentation)

Brian Loizzi (Biology)

Faculty Research Mentor: Scott Parker, Biology

Testing diverse animal species is important for a broader understanding of biological and cognitive processes. Many species of birds and mammals have been tested, but reptiles have largely been ignored, especially in cognitive and behavioral research. Before testing finding appropriate testing methods is necessary. Leopard geckos (*Eublepharis macularis*) were tested in a t-maze for an operant conditioning task. Geckos were first acclimated to the t-maze in order for them to associate heat with the arms. Geckos then were required to choose between two arms of the maze and received heat from a nighttime lamp for a correct choice. We adjusted the duration of the heat to optimize the stimulus duration. This experiment went through several iterations as issues arose during testing such as room temperature, over-handling of the individuals, and light aversion.

Comparing the Garmin Vivosmart Hr Activity Monitor to the Cosmed K4b2 Metabolic Backpack In Measuring Heart Rate (Poster Presentation)

Alexandra Lucas (Exercise and Sports Science)

Faculty Research Mentor: George Lyerly, Exercise and Sports Science

Background: In today's fitness society, the growth of activity monitors is becoming more notable. The Cosmed K4b2 (K4) is one of the most highly accurate systems used to measure heart rate (HR), while the Garmin Vivosmart HR (GV) is one of the newest and more advanced activity monitors on the market. The GV has yet to be tested to prove its accuracy of its heart rate monitor in comparison to the K4. With a growing number of people relying on these activity monitors to give them accurate data on their activity levels, it should be known how accurate is the data being given. Purpose: To determine the accuracy of the heart rate monitor of the GV to that of the K4. Methods: 10 individuals wore both the GV and the K4 while walking on a treadmill for 10 minutes. The measures taken were HR on both devices. Prior to exercise, participants had their weight, height, BP, and HR measured. Participants were asked to walk normally and not hold on with GV hand. Results: The mean HR for the K4 was 96.7 ± 12.85 , while GV was 99.8 ± 12.97 . Conclusion: Our data indicated a positive correlation found between the K4 and GV with an r-value = 0.797; p-value = 0.006. Thus, the data suggests that the GV is as accurate as the K4 in measuring heart rate. The data also suggests that the GV may be a cheaper alternative to the K4 for tracking HR with researchers. Further testing with a larger population is warranted to help determine the accuracy between both pieces of equipment.

Quantifying Perceptions of Substance Abuse: Promoting Positive Change (Oral Presentation)

Ashley Lynch (Biology) and Sydney Brown (Biology)

Faculty Research Mentor: Sharon Thompson, Public Health

Between 2015 and 2016 there was an 11% increase in drug overdose deaths in South Carolina. During this time frame, heroin deaths drastically increased by 17%; furthermore, 70.3% of these drug overdose deaths involved opioids. Collaborations with The Addicts Mom, a state senator, and the Myrtle Beach

Police Department led researchers to the creation of an online and paper-pencil substance abuse perceptions survey. Results (n = 644, Mean age = 31 years) were examined by gender, survey obtainment method, and employment status. Most respondents believed addiction is a disease (M = 4.31) and that addiction can be overcome through willpower (M = 3.20). Eleven-percent (11%) were unaware what an opioid was or where to seek help (25%). As a result of the findings, a public awareness event, Horry Hope, was organized to provide resource information and encouragement to those touched by substance abuse in our community.

Navigation of Autonomous Robots (Oral Presentation)

Steven Manz (Physics)

Faculty Research Mentor: Louis Rubbo, Physics

Autonomous robot movement is an increasingly useful part of everyday life. I am working with a group of enthusiastic high school students that build robots each year for the FIRST Robotics Competition. The problem with most teams in the area is that human nature or build malfunctions can cause errors to occur when using manual movement. My goal is to design a general code for students to use on their robot that will create competitive autonomous motion that can decrease error and make the robot quicker and more efficient. The package I am creating will use a gyroscope and a terrain tracking sensor to determine the motion necessary to move to avoid obstacles. This will give these students the ability to build a system in which they can press any point on a map and have their robot move to that exact point.

Identifying the Protein - protein Interactions of Maturase K (Oral Presentation)

Alexandra Margets (Biochemistry)

Faculty Research Mentor: Michelle Barthelet, Biology

After DNA is transcribed into RNA, and before RNA can carry out its role in gene expression, small segments of the premature RNA transcripts, called introns, are removed by splicing. Within the nucleus, a spliceosome, a multi protein-RNA complex, works to remove these noncoding regions of RNA. While the spliceosome is generally associated with the nucleus of eukaryotic cells, the chloroplast of land plants may also contain its own specialized spliceosome. Group IIA introns of the chloroplast have been postulated to be excised by nuclear encoded factors such as What is the Factor 1 (WTF1), and the ribonuclease III protein (RNC1), as well as plastid-encoded factors, specifically Maturase K (MatK). A series of co-immunoprecipitation studies have been initiated to assess the protein – protein interactions between MatK and splicing factors of chloroplast group IIA introns. Data will devise a model of the splicing processes in the chloroplast of land plants

Is Evolutionary Naturalism Self-Defeating? (Oral Presentation)

James Martin (Philosophy)

Faculty Research Mentor: Aneilya Barnes, Philosophy

This paper examines Alvin Plantinga's Evolutionary Argument Against Naturalism. Plantinga argues that the two views of evolution and metaphysical naturalism (the view that there exists no supernatural beings) are in serious conflict, specifically by way of being epistemically self-defeating. His argument, roughly, contends that our cognitive faculties would not be reliable if both naturalism and evolution, as currently understood, are true. This conclusion is counter-intuitive, given that evolution is typically viewed to support naturalism. This paper will then consider only the strongest objection to this argument, which centers on the causal efficacy of true beliefs in adaptive behavior, and, ultimately, demonstrate how the argument survives this particular objection

Ontogenetic Changes in Ghost Crab Behavior: Size and Gender Effects (Poster Presentation)

Logan Masterson (Marine Science)

Faculty Research Mentor: Eric Rosch, Marine Science

Animal behavior is often dependent on the gender, size, and maturity of the individuals involved. Territorial animals, such as ghost crabs, are particularly well-suited for investigation into how they respond to stimuli. In the current study, sub-adult and adult ghost crabs, *Ocypode quadrata*, were observed how they responded to a perceived threat in order to ascertain factors that influence their behavior. Factors analyzed were carapace width, handedness, cheliped size, sex, and approach direction. Crabs were extracted from their burrows and trials were performed in situ on the beach. After a few minutes of acclimation, crabs were approached from various angles and the subsequent responses recorded. The data were separated into three response categories, aggressive, neutral and defensive. Aggressive behaviors were more common in males, larger individuals, and crabs with larger claws relative to body size. These results suggest that threat responses in ghost crabs may be related to ontogenetic factors such as size and sex of individuals, and could be applied to other territorial organisms.

Social Media and Negative Aspects of Well-Being: Does FOMO Play a Role?

Casey McAndrews, Psychology

Faculty Research Mentor: Andrew Terranova

Recently, researchers have found that Fear of Missing Out (FOMO) and social media use relate to negative aspects of well-being, such as depression, anxiety, stress (Alabi, 2013; Alavi, Maracy, Jannatifard & Eslami, 2011) and lack of academic motivation (Jacobsen & Forste, 2011). Using a series of multiple regression analyses, the current study examined the associations between social media engagement and negative aspects of well-being, while also examining the mediating role of FOMO between these variables. Findings indicated that FOMO was a significant mediator for the associations between social media use and anxiety and stress. However, FOMO did not seem to mediate the relationship between social media use and depression and academic motivation. These findings supported previous research claiming that social media use can have negative effects on well-being (Alabi, 2013; Alavi et al., 2011), however further research is needed to better understand the causation of these negative effects.

SharkCam Video Observation of Marine Fishes Associated With Hard Bottom Habitat

Tyler McKay and Nick Coleman, Marine Science

Faculty Research Mentor: Erin Burge, Marine Science

In August 2014, the Annenberg Foundation's Explore.org project installed a publically accessible underwater streaming webcam, SharkCam, at the Frying Pan Tower, 60 km off the coast of southeastern North Carolina. The camera is attached near the bottom in 15 m of water. The camera surveys the 3-dimensional structure that the tower legs represent and is adjacent to an expansive area of natural hard-bottom reef. Both these man-made and natural structures are important areas of high marine fish diversity. The camera is utilized for research by cohorts of students that data mine the archived footage for occurrence and relative abundance information on the fish assemblage. From over 500 video segments of 20 minutes each we have compiled over 8,500 occurrence records for 93 species of fishes. These records are being used to characterize the fish assemblage in terms of frequency of occurrence, seasonality, relative abundance (for 52 species), and environmental correlates.

Non-Profit and For-Profit Employee Differences: Measuring Perception of Cohesion, Individualism, Collectivism, and Personality (Oral Presentation)

Hayes C. McLeod (Interdisciplinary Studies)

Faculty Research Mentor: William Hills, Psychology

The use of teams within the workplace has been increasing over the last two decades. The benefits of the use of teams allows organizations to achieve goals more quickly while also creating a more creative approach to accomplishing goals. The cohesiveness of employees has been demonstrated to be influential in predicting a team's success within the workplace.

Thus, the increased use of teams suggests the cohesiveness of employees is becoming more important to meet organization goals. Further, the global introduction of teams within the workplace suggests societal differences can have an effect on overall cohesion. The purpose of this study was to determine the relationships between an employee's perceptions of cohesion, individualism, collectivism, and personality traits. These variables, along with amount of training and telecommunication were measured to assess differences for employees of non-profit and for profit organizations. Data were collected from individuals across North America within non-profit and for-profit organizations.

Intruder Alert! Fiddler Crab Response to a Same Species Invader (Oral Presentation)

Carley Metcalf (Marine Science)

Faculty Research Mentor: Eric Rosch, Marine Science

Fiddler crabs are territorial of their burrows and have well-maintained dominance hierarchies in their social system. These crabs are sexually dimorphic; males have an enlarged claw used for courtship and territorial displays. However, few studies have investigated the nature of territoriality in fiddler crabs in a controlled setting. The current study examined behavior of *Uca pugilator*, which is native to estuarine mud flats on the eastern coast of the United States. The purpose of this study was to better understand how fiddler crabs respond to intruders given a specific social dynamic. Observations suggest that males display possessive behaviors over the resident females when threatened by another male. Females show a team effort response when the resident male failed to display dominant behaviors against the intruder. These results have implications for the complexity of the social structure and dynamics within fiddler crab communities that seem to be dependent upon neighbor familiarity.

The Value of Water: Gender and Desired Outcomes in Volunteer Water Quality Monitoring (Oral Presentation)

Krystina Millar (Sociology)

Faculty Research Mentor: Jaime McCauley, Sociology

My research focuses on why individuals involved in volunteer water quality monitoring [VWQM] view monitoring the water as important. Gender socialization is often used to explain differences between men and women regarding environmental attitudes. Applying this theory to the current research suggests men may be more likely to view monitoring as important because of its economic value, while women may express more concern about environmental threats to local public health issues. Fifty-four interviews from a nationwide study pertaining to the motivations and desired outcomes of individuals involved in VWQM are the foundation for this paper. Results indicate that men focused more on the economic value of the water, while women placed a stronger emphasis on public health and environmental health. Men were more likely to want their monitoring to result in increased attention from government agencies and legislative change, while women wanted the data to be used for educational purposes.

Not my Holocaust: Hollywood's Narrative and the Distortion of Holocaust Memory (Poster Presentation)

Taylor Monahan (Philosophy)

Faculty Research Mentor: Alex Hogue, Language and Intercultural Studies

Since the Golden Age of Cinema, America's film industry has tended toward producing sensational and idealized cinematic worlds on screen. While this focus on idealization has become typical of Hollywood films, several problems arise when Hollywood films depict grave historical events, such as the Holocaust. Functioning not only as records and depictions of American Holocaust preservation, films communicate collective Holocaust memory to future generations. This paper argues that American Holocaust memory has been shaped by a distorted narrative produced in Hollywood; namely, a narrative that produces, packages, and sells an idealized American depiction of the Holocaust. This paper will explore four techniques characteristic of Holocaust films produced in Hollywood: the inclusion of identifiable American casts, American Heroism, happy endings, and the usage of children to increase audience sympathy; specifically, in relation to Hollywood's Holocaust narrative in reshaping, altering, and distorting America's popular memory of the Holocaust

Effects of Perceived Audiences on Anxiety, Heart Rate, and Performance on Problem Solving Tasks (Oral Presentation)

Peyton Mueller (Psychology, Interdisciplinary)

Faculty Research Mentor: Terry Pettijohn, Psychology

This study investigated the effect of social facilitation in relation to perceived audiences on a variety of problem-solving tasks in college students. Participants were recruited to complete one of three different tasks: cognitive task, a motor task, and a combined task to see on which task, if any, visually perceived (but nonexistent) audiences had the greatest effect. Participants completed a pre- and post-task anxiety measure, complete with a measure of heart rate in beats per minute (BPM) to see if state anxiety was affected by the task and the perception of an audience. This study has implications for future research into anxiety in relation to social media use and abuse, a more parsimonious explanation of the social facilitation theory, issues in sports psychology, and academic and professional evaluations. Results and further implications will be discussed.

Assessment and Comparison of Distribution and Impacts of Microfiber Plastics between Coastal South Carolina and Bimini, Bahamas (Poster Presentation)

Jessica Myers (Maine Science)

Faculty Research Mentor: George Boneillo, Marine Science

Microfiber plastics are a growing problem that threatens the health of marine ecosystems, organisms, and humans. In this study, the distribution and concentration of microfibers were observed between regions with differing population densities: Bimini, Bahamas and coastal waters of South Carolina (Waite Island and Winyah Bay). Surface water samples were collected in glass jars from coastal and estuarine environments and filtered through gridded 0.45-micron filter. Microfibers were counted using a dissecting microscope. Results show that microfibers were found within all samples. The average amount of microfibers found in the Bahamas was 254 plastics per liter. In Winyah Bay, the average concentration of microfibers was 307 plastics per liter. The highest concentration in Winyah Bay was over 1,900 microplastics per liter found after Hurricane Irma impacted the area. Results from this study will be a part of the ever-growing data on microplastic pollution and could lead to educated, region-specific management plans.

Effects of Financial Responsibility on Mental Health (Oral Presentation)

Meredith Nichols (Psychology)

Faculty Research Mentor: Miranda Brenneman, Psychology

Students are put under a lot of pressure and have a lot of responsibilities as it is to be attending a university full time. A lot of these students are also financially responsible for their bills, education and other activities and responsibilities. This leads to students having to also work a job to support themselves

and their education on top of attending school. This research study is to see the effects of having financial responsibility and working 25 or more hours a week on a student's GPA and mental health, specifically depression and anxiety. Through a series of surveys, trends and relationships are seen from these students everyday lives, mental health and financial responsibilities.

Is There a Correlation between Estuarine Habitat Complexity and Survey Density of Bottlenose Dolphins (*Tursiops truncatus*)? (Oral Presentation)

Riley Norman (Marine Science)

Faculty Research Mentor: Robert Young, Marine Science

Estimates for the abundance and range of estuarine stocks of bottlenose dolphins are not always known in the Southeast US. This makes it difficult to assess the health and overall status of the stocks. In the absence of such information, changes in survey densities (relative abundance) can be used to monitor population trends over time. We investigated the hypothesis that seasonal dolphin survey density is correlated with habitat complexity in the salt marsh estuaries of South Carolina. Photo-identification surveys were conducted from May 16 to October 20, 2017 in estuarine waters from North Inlet/Winyah Bay to ACE Basin, SC. Each sub-location was surveyed on six separate occasions for comparison. The dendritic pattern of salt marsh creeks was quantified based on a modification of the fresh water stream order system, and a correlation between habitat complexity of the survey track and the number of dolphins sighted per survey will be reported.

Mood and Body Dissatisfaction among College Students (Poster Presentation)

Maddison O'Leary (Public Health)

Faculty Research Mentor: Sharon Thompson, Public Health

Body dissatisfaction has previously been linked to low self-esteem and depression among adolescents. A Mood and Body Image survey was administered to Coastal Carolina University undergraduates (N = 51, 70.5% female) in the Fall of 2017. This paper-pencil survey included demographic information, measures of body dissatisfaction, and selected constructs from The Stress Profile (Nowack, 1999) to determine psychological well-being. The purpose of the survey was to determine if current body size, desired body size, and body dissatisfaction are significantly correlated with self-ratings of health and constructs within The Stress Profile among undergraduates. Statistical findings were also examined by gender. Results will follow.

Impact of Music on Mood (Poster Presentation)

Courtney Padgett (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

Research studies have found that listening to certain music genres are associated with anxiety (Walworth, 2003) and stress (Labbe, Schmidt, Babin & Pharr, 2007). For example, classical music and self-selected relaxing music was significantly associated with lower stress levels (Labbe, Schmidt, Babin & Pharr, 2007), but less research has linked specific music genres with depression and anxiety. In the current study, participants will be randomly assigned to listen to a country music song, a pop music song, or no music and to report on their demographic characteristics, depression, and anxiety. Those participants who listened to country music are anticipated to have higher levels of depression and anxiety symptoms than those who listen to pop music or no music. Data will be collected after listening to the song by surveys related to depression, anxiety and demographics. Data collection will begin soon.

Constructing Cultural Identity: The Panayia Villa at Corinth (Oral Presentation)

Darrah Panzarella (Art History)

Faculty Research Mentor: Elizabeth Baltes, Art History

Excavations of the Panayia Villa at ancient Corinth, carried out by the American School of Classical Studies at Athens, have brought to light a number of important domestic artefacts including life-size marble statues, marble statuettes, pottery, mosaic floors and wall frescoes. In addition to these finds, the Panayia Villa itself provides evidence of Corinth's cultural break from Greek heritage when it was destroyed by a Roman general in 146 B.C. and re-founded as a Roman colony in 44 B.C. In this essay, I use the Panayia Villa's structural plan and interior decoration to interpret how the owner of the villa used domestic space to display his or her identity in terms of social status, religious views, and cultural taste. By carefully exploring the intersections of Greek and Roman society in the houses of Roman Greece, I interpret the social and cultural contexts that are reflected in the villas decoration.

Amazons: Making and Breaking Boundaries (Oral Presentation)

Victoria Peck (History)

Faculty Research Mentor: Aneilya Barnes, History

Gendered representations of Amazons were a recurring theme in the Greek world. This paper will demonstrate the gendered notions associated with Amazons from classical Greece, such as Penthesilea and the Temple of Apollo at Eretria, which will be done through in-depth analyses of visual sources, ranging from temples to black figure vases. The analyses will be centered on depictions of Amazons interacting with other women, civil and combatant interactions with men, and Amazonian attire. As a result, this paper will illustrate the main ways in which Amazons adhered and diverged from the idealized gendered Greek norms for women.

Assessing the Therapeutic Potential of Hangman Phage in Comparison to TM4 Phage (Poster Presentation)

Mayana Pires (Biology)

Faculty Research Mentor: Megan Cevasco, Biology

The bacteriophage, Hangman belongs to the cluster B4 of actinobacteriophages and has the host *Mycobacterium smegmatis* mc2155. Due to a global increase of bacterial antibiotic resistance, phage therapy offers an alternate therapeutic approach to target specific bacterial diseases. TM4, a cluster K actinobacteriophage, has been studied and observed to have high phage therapy potential for treating the mycobacterial disease, Tuberculosis. Hangman (cluster B), will be compared to TM4 and other cluster K phages to comparatively determine its therapeutic potential. Different bioinformatic approaches such as DNAMaster, HHPred, Phamerator, NCBI Blast, and PhagesDB were used to compare the genomes. Based on information from these bioinformatics resources, we assessed the therapeutic potential for the bacteriophage, Hangman

The Effects of a Picture and Description on Perceptions of the Disabled (Oral Presentation)

Claire Poeckes (Politics, Psychology)

Faculty Research Mentor: Miranda Brenneman, Psychology

Previous studies have come to a consensus that society perceives the disabled community differently than the abled community. The purpose of this study was to determine the effects of a picture and description on prejudice, stereotypes, and bias towards the disabled. Two hundred students from Coastal Carolina University participated in the experiment. There were 4 conditions: an abled picture without a disability statement, an abled picture with a disability statement, a disabled picture without a disability statement, and a disabled picture with a disability statement. An ANOVA test was performed. There was no

significant main effect of picture or description, and no interaction effect for prejudice, stereotypes, or bias. The possible reasons for the results are social desirability bias and contact with the disabled. Society needs to understand the level of prejudice stereotypes, and bias toward the disabled in order create better remedies for society's perceptions of the disabled.

Effects of Regional Hypoxia on Cognitive Ability in Juvenile Leopard Geckos (*Eublepharis macularius*)

Rebecca Polaski (Marine Science)

Faculty Research Mentors: Scott Parker, Chemistry and Matthew Murphy, Psychology

Successful embryonic development is dependent on ability of embryos to maintain oxygen homeostasis during gestation. Hypoxia (low oxygen) affects neural development of embryos. Hypoxia during development may result from a reduction in respiratory surface area (regional hypoxia). The purpose of this study is to test the hypothesis that regional hypoxia during development results in retarded embryonic development and impairs cognitive function in leopard geckos (*Eublepharis macularius*). We reduced the respiratory area available to embryos by covering approximately $\frac{3}{4}$ of the egg shell's surface area with gas-impermeable paraffin wax at either 24 hours or 15 days after laying. Eggs were incubated for 15 days under conditions of regional hypoxia, the wax was removed, and eggs were incubated until hatching occurred. Cognitive function was measured in a standard T-maze. Results indicate that regional hypoxia reduces juvenile growth rate and impairs ability of hatchling geckos to correctly associate color/food combinations.

Race and Religion in Primary Rhetoric (Oral Presentation)

Alexandria Putman (Politics, Communication)

Faculty Research Mentor: Adam Chamberlain, Politics

Over the years, many scholars have studied rhetoric as a tool to persuade audiences to support a cause or candidate. This study investigates its use during presidential primaries to determine how politicians tailor their speeches to different party affiliated audiences. To do so, this study evaluates references made about religion and race to determine if and how they are used as appeals to garner support from an audience. Using a unique coding scheme to categorize speeches from a sample of Republican and Democratic presidential primaries ranging from 2008 to 2016, I will study the frequency with which racial and religious appeals are used by candidates and how they are used to effectively gain voters support.

An Ethnographic Exploration of Invisible Disabilities (Oral Presentation)

Cooper Ress (Psychology)

Faculty Research Mentor: Gillian Richards-Greaves, Anthropology

From post-traumatic stress disorder and traumatic brain injuries to autism and diabetes, there is a significant populous among you who may feel misunderstood or unsupported because of their unseen plight. The goal of this project is to highlight and examine the nature of "invisible disabilities; that is, those not readily perceived with the naked eye or through casual observation. By engaging with individuals who live with invisible disabilities, I hope to find tangible solutions to assist in overcoming related adversities, and in the process, devise strategies for educating the broader public about invisible disabilities. To gain a better understanding of the impact of hidden disabilities on communities, I will utilize ethnographic methods, including archival research, observations, interviews, life histories, and surveys with individuals who are directly affected by invisible disabilities as well as those who are not.

A Comparison of Information Processing Speeds of Artists and Non-Artists (Poster Presentation)

Emily Ricardo (Exercise and Sport Science)

Faculty Research Mentor: Gib Darden, Exercise and Sport Science

In motor skill research, reaction time (RT) measures have been the most common assessment of information processing (IP) efficiency in individuals. Debate continues to whether or not RT is an innate trait or developed response. Though much research has compared sport populations, little research has compared RT performance in artistic populations. RT differences have been reported in dancers vs. non-dancers, for example (Kaya, et al., 2010). The purpose of this study was to compare RT of artists and non-artists. The study hypothesized differences among Theatre (N=12), Band (N =11), or General Population (N =15) groups. Testing used a MOART Reaction Time and Movement Time Panel (Lafayette Instruments). Reaction and movement times (MT) were recorded for auditory (ART) and visual (VRT) stimuli. RT results revealed no significant differences between participation groups. MT results showed no significant differences between groups. ART produced faster reaction times between groups. Results support that training background has no impact on laboratory measures of reaction time. The present study limited its investigation to simple RT in a laboratory environment. Future research should investigate complex IP differences (e.g. choice or discrimination RT) in authentic settings (e.g. music or theatre), since IP is often task-specific (Shelton, et. al. 2010).

Visualization of Cell-Specific ROS Production in *C. elegans* (Poster Presentation)

Kyra Ricci (Biology)

Faculty Research Mentor: Daniel Williams, Biology

Neurodegenerative diseases have a significant impact on human health and society. Despite their significance little is known about the exact causes and cellular pathways involved, although ROS can induce the degeneration of neurons. To study the relationship between ROS and neurodegeneration, our lab uses *C. elegans* as a model and has generated worms that express KillerRed, a protein which produces ROS when illuminated with green light. ROS produced from KillerRed activation causes cell-specific neurodegeneration of GABA neurons. In order to visualize the ROS production in the neurons, KillerRed worms were treated with H2DCFDA, a reagent that fluoresces in the presence of ROS. Upon illumination, fluorescent signal was visualized in the GABA neurons, confirming the production of ROS within these cells. Ultimately, this method will be used to measure cell-specific ROS production in different strains of *C. elegans* and contribute toward our understanding of how ROS contributes to neurodegeneration.

Genome Announcement for Mycobacterium Phage Hangman (Poster Presentation)

Kyra Ricci and Molly Tancini (Biology)

Faculty Research Mentor: Megan Cevalco, Biology

Mycobacteriophage Hangman is a phage isolated in 2017 at Coastal Carolina University infecting *Mycobacterium smegmatis* strain mc2155. Hangman has a 71,376-bp genome and is predicted to contain 96 protein-coding genes and 0 tRNA genes. This phage has a lytic lifecycle, meaning phages infect and proliferate within a bacteria cell and then lyse the cell to release new phages. Hangman is related to the mycobacteriophages Zemanar and BrownCNA and to other Cluster B and Subcluster B4 phages. We present genomic data on this phage including an estimation of coding and noncoding regions, percent of start codon usage, and comparison with similar phages within the cluster and subcluster

The Justification of Effort Effect (Oral Presentation)

Dylan Roach (Psychology)

Faculty Research Mentor: Matthew Murphy, Psychology

The justification of effort effect is when the positive outcome of the more difficult task is favored over that of the easier one, such as valuing the membership of a club that you had to work months for rather

than one you got into the same day. We tested the justification of effort found in tasks that challenge the mind rather than the body. We tested this by creating easy and hard word-searches, then they were given different colored tokens as rewards. At the end, we surveyed the participants and asked if they preferred the harder task reward or the easier task reward. We predicted that the harder task reward will be valued more. Results and implications will be discussed.

Effectiveness of Regenerative Braking in Myrtle Beach (Poster Presentation)

Troy Rodway (Physics)

Faculty Research Mentor: Siming Guo, Physics

This will be a study of the effectiveness of regenerative braking in hybrid vehicles in Myrtle Beach and the surrounding area. Currently, certain government agencies publish industry-standard driving speed profiles for determining fuel efficiency, but these are not specific to one area. An OBD II sensor will be used in the Myrtle Beach area to record speeds during daily driving in order to create a profile specific to Myrtle Beach. That data will be analyzed and compared to existing profiles and be specifically applied to hybrid vehicles and their effectiveness of regenerative braking. Based on the analysis, the benefits of a hybrid vehicle in Myrtle Beach will be determined.

Progress towards Phidianidine Synthesis (Poster Presentation)

Kayli Rohal (Biochemistry)

Faculty Research Mentor: Bryan Wakefield, Chemistry

Phidianidine A and B are natural products isolated from a marine mollusk that have shown biological activity against cancer cell lines, HIV, rheumatoid arthritis and a variety of neurological diseases such as Alzheimer's. In addition, these are the first naturally occurring compounds found to contain a 1, 2, 4 oxadiazole ring. This ring is linked to an indole through a methylene bridge and contains an amino alkyl guanidine group at C-3. Recently, analogues of the phidianidines that replace the alkyl side chain with a biaryl group have been identified and prevent oxidative damage in nerve cells. The goal of this project is to create more of these phidianidine derivatives containing a variety of indole rings to determine how it affected the potency of the chemical in the prevention of reactive oxygen caused neurological damage.

Creativity and Social Behaviors in College Students (Poster Presentation)

Lucille Romanic, Zachary Merkle and Samantha Inker (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

This study is looking at the relationship between creativity and deviant behavior. It will determine what aspects of deviant behavior can be associated with and influence creativity. We predict that creativity will have a positive correlation with antisocial behaviors and there will be a negative correlation between creativity and religiosity. Also that those who report themselves as creative will be positively correlated with prosocial behavior. Creativity stems from a thought process that evolves to create something new, unique and innovative as well as useful and relevant (Kaufman, 2009). Participants completed a self-report measure as well as an alternate uses task in order to measure creativity, antisocial behavior, and prosocial behavior.

Women in Public Administration (Oral Presentation)

Samantha Ruesch and Brandon Johnson (Intelligence and National Security Studies)
Faculty Research Mentor: Mikel Norris, Intelligence and National Security Studies

The focus of this presentation will examine whether gender plays a role in the various careers of public administration (PA). Many problems arise in public administration, as the United States had its own domestic, economic, and social issues. These problems have helped the development of public administration, and also has aided the public, as well as the government to see what gaps need to be filled in this field. In the beginning of the 20th century, gender become a more vital topic to public administration. Many women, as well as men began to fight for reform and inclusion in public administration. We have created a list of ten questions to examine how the questions were answered and if they were answered differently based upon gender. We will also look to see if any correlations were formed from the different responses to these questions.

Cash Bail and African American Inequalities (Oral Presentation)

Allie Sheets (Politics)

Faculty Research Mentor: Jonathan Trerise, Politics

Cash bail, within the criminal justice system, unfairly discriminates against lower-income minorities, specifically African Americans. This paper will seek to determine why and how this occurs, as well as to propose possible solutions to the problem at both the state and national level. First, by evaluating the history of bail, I outline how the use and interpretation of bail has evolved overtime. Second, I address the type of equality that should be sought after and what this means for policy reformers. Third, I review internal causes of the aforementioned discrimination, such as judicial discretion and plea bargaining. Finally, through the inspection of areas that have already taken steps towards bail reform, such as New Jersey and Washington, DC, I evaluate how the policies in those states may be applicable in South Carolina.

Homeschool Children Fitness Level

Alexis Siegel and Anderson Caralho (Physical Education)

Faculty Research Mentor: Nilo Ramos, Education

As more children are being homeschooled, they may not be getting the same physical education (PE) experience as children in schools. In order to develop a lifelong goal of fitness and health, it is important for all children to be physically fit. The purpose of the study was to examine homeschool children's fitness levels. The children participated in a 10-week PE program that was designed to improve the student physical fitness levels and provide skill development. The FitnessGram test was used in the beginning and end of the program to measure the children physical fitness performance. The results showed that children did not achieve expected levels in all areas of fitness. With the number of homeschool children growing, it is important for children to have knowledge of their fitness levels and understand the relationship between fitness and health, as well as their parents.

Water Quality Analysis at Playcard Environmental Education Center (Poster Presentation)

Casey Silva (Marine Science)

Faculty Research Mentor: Jane Guentzel, Marine Science

Water quality is highly studied for a range of variables within fresh and marine water systems. This semester while interning at Playcard Environmental Education Center, I conducted a water quality study testing for dissolved oxygen, pH, conductivity, turbidity, chlorophyll, nutrients, and microplastics at five different sampling locations for six weeks. The objective of this study was to quantify the differences in the water quality as the seasons transitioned from winter to spring as well as the variation in water quality between the different sample locations.

Long Term Analysis of Atlantic Tropical Cyclone Formations (Oral Presentation)

Jasmine Smith (Marine Science)

Faculty Research Mentor: Craig Gilman, Marine Science

A century's worth of data was collected to statistically observe the latitudes during formation of tropical storms, minor hurricanes and major hurricanes in the North Atlantic. A major component of tropical cyclone formation is sea surface temperature (SST). If tropical cyclones are forming at higher latitudes, this would correlate with the increase in the Atlantic SST. Graphs were formulated to observe latitude of formation throughout the years. A positive trend was observed in tropical storms with a slope of 0.0332, in minor hurricanes with a slope of 0.0376 and in major hurricanes with a slope of 0.0031. Tropical cyclones could be forming out of season (June 1st-Nov 30) due to SST increasing. A graph was plotted to observe the number of storms formed out of season for the past century. A positive trend was observed for the formation of tropical storms outside of season with a slope of 0.3531.

Phylogenetic Comparisons of Three Regions within the Bacteriophage Hangman (Poster Presentation)

Rachel Smith and Mark Akers (Marine Science)

Faculty Research Mentor: Megan Cevalco, Biology

Phylogenetic analyses for three genes of Hangman, a bacteriophage, are presented and the evolution of these genes inferred. The three genes chosen, the tape measure protein, terminase large subunit, and terminase small subunit are conserved throughout all tailed phages. Individual bacteriophage proteins are relatively diverse for a small genome and vary greatly within phage clusters (> 50% similarity) as defined by the Actinobacteriophages Database. Phylogenetic trees offer insight into the evolution of Hangman's conserved phage proteins by creating a spatial diagram of shared derived characters. Small changes in sequences change the relatedness of the genes although the function is still the same. Genetic diversity of the different genes is assessed based on the nucleotide and amino acid sequences. These phylogenetic trees and genetic analyses show evolutionary lines of gene transfer through different phages.

A Proof of Concept Study Incorporating Prussian Blue Beneath a Glucose Oxidase Xerogel (Poster Presentation)

Jacob Strohl and Megan Harvey (Chemistry, Marine Science)

Faculty Research Mentor: Drew Budner, Chemistry

Glucose is a model compound for initial biosensor studies and limited work has been conducted incorporating the xerogel-based biosensors with Prussian Blue. Research in our lab has shown that these sensors are feasible and straight-forward to produce. In these sensors glucose is reacted with the capsulated glucose oxidase to form hydrogen peroxide. The hydrogen peroxide is then reduced by the Prussian Blue at the electrode surface producing a signal. This work details our further optimization and exploration into biosensors of this type.

Implications of Racial Tensions on Implicit Biases in Processing Information about Different Races (Poster Presentation)

Tavia Sturgill (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

Research conducted before the Black Lives Matter movement arose suggests that African Americans are more discriminated against (Dutton, 1973), even by law enforcement officers (Plant & Peruche, 2005). Research conducted after the Black Lives Matter movement was started, however, suggests that officers are taking slightly longer amounts of time to shoot an African American suspect than to shoot a

Caucasian suspect in simulations (James, James, & Vila, 2016). In the current study, participants will be playing a computerized game where they will be instructed to determine whether to “shoot” or “not shoot” suspects of different races. Prior to playing, some participants will be exposed to a Black Lives Matter primer. It is anticipated that participants presented with a Black Lives Matter primer while playing the computerized game will take more time to determine whether to shoot African Americans and be less like to shoot African Americans in error.

Does Prey Availability for Venus Flytraps (*Dionaea muscipula*) in Lewis Ocean Bay Heritage Preserve Differ between Established and Introduced Populations? (Oral Presentation)

Abby Taylor (Biology)

Faculty Research Mentor: John Hutchens, Biology

Venus Flytraps (*Dionaea muscipula*) are a rare species of carnivorous plant native to coastal North and South Carolina. Established and introduced flytrap populations in Lewis Ocean Bay Heritage Preserve were compared based on their prey availability. Introduced flytraps capture more prey, so differences between population types may be explained by more food available. Samples were collected in March, May, and August 2017. Ground-dwelling invertebrates were collected for 48 hours using four pitfall traps in each population (3 of each population type, n=6). Invertebrates were counted, identified, and measured by length. Prey availability between population types differed significantly in terms of abundance but not in terms of average individual length. Taxonomic composition in both population types were dominated by Collembola, mainly Isotomidae. Managing for prey availability may be a useful conservation measure for this rare carnivorous plant.

Fruit Parks for Homeless People (Poster Presentation)

Rachel Teichman (Sociology)

Faculty Research Mentor: Jaime McCauley, Sociology

Sociological research shows that green space and public parks have multiple benefits for society; including mental and physical health, community development, and improved environmental conditions. Here I propose another benefit: public parks can be used to address social problems like food insecurity and access to nutritious foods for low-income residents. Myrtle Beach and Conway, SC struggle with food insecurity and homelessness, but also have a history of agriculture and beaches that attract tourists from many diverse areas. Green spaces can be used to provide not only as areas of education, art, exercise, but also as a source of healthy food that celebrates local history and culture through the use of native species like peach and pecan. The locations of such parks also generate opportunities for community building with local Churches and schools. At this time, the cities of Conway and Myrtle Beach have shown interest in this proposal.

A Technophilic Dilemma: The Rise of Low-Tech Actors and Its Consequences for U.S. Intelligence Collection (Oral Presentation)

Carlie Todd (Intelligence, History)

Faculty Research Mentor: Joseph Fitsanakis, Intelligence and National Security Studies

The United States Intelligence Community is primarily a product of the Cold War. It has been said that the closed nature of Soviet and other Eastern-Bloc societies can help explain the systematic emphasis placed by US intelligence on technological means of intelligence collection. Consequently, the US IC today displays a strong bias toward technical platforms of intelligence collection. There is mounting evidence to suggest, however, that America’s adversaries and allies alike are managing to evade the NSA’s reach simply by following a practice known as “Abandon Normal Devices” (AND). In short, these actors are using low-tech means of communication in an asymmetric fashion, thus rendering useless the NSA’s admittedly remarkable interception capabilities. In this paper, I will provide the evidence for the

rise of the AND phenomenon and explain the challenges that it poses, not simply for US intelligence collection, but for the entire architecture of the US Intelligence Community

Are There Flaws in Forensic Identification? (Poster Presentation)

Diazia Torres (Psychology)

Faculty Research Mentor: Melissa Paiva-Salisbury, Psychology

Yes! Forensic identification is the second leading cause in wrongful convictions. Previous research suggests that a lack of juror education on the inaccuracies in forensic identification could be contributing to the problem. The CSI effect, where jurors obtain knowledge from crime shows, is likely a factor as well. If jurors were educated on the inaccuracies of forensic identification, they may be more careful in reviewing forensic evidence. The current study will have participants review a case and complete a verdict rating. Then, they will watch an educational video on bite-mark analysis, followed by another verdict rating and survey. Data will be analyzed using a repeated measures t-test in this pretest-posttest design. The results will be discussed and potential policy changes will be recommended.

THRIVE: The Hunger Reduction in Vulnerable Environments Project (Oral Presentation)

Rachael Trudon and Amber Rahman (Sociology)

Faculty Research Mentor: Sharon Thompson, Sociology and Public Health

According to the United States Department of Agriculture (USDA, 2017), food insecurity is defined as a household-level economic and social condition of limited or uncertain access to adequate food. Nationally, 12% of households are estimated to be food insecure. In 2015, 39,470 Horry County residents (13.9%) reported to have been affected by food insecurity. Undergraduates experience very low food insecurity as research shows 20% of four-year and 25% of two-year students report hunger. Food insecure undergraduate students are 75% more likely to receive financial aid and 52% more likely to receive a Pell Grant. In order to examine rates and perceptions of food insecurity among Horry County residents and undergraduates, a survey was created and administered in undergraduate classes and also promoted online. Results will follow.

Effects of a Confederates Gender and Sexual View on College Women's Views of Casual Sex (Oral Presentation)

Natalie Tyran (Psychology)

Faculty Research Mentor: Miranda Brenneman, Psychology

This study was interested in how personal attitudes towards casual sex are influenced by peers and how that undoubtedly shapes behavior. In the intervention period, the participants engaged in a prompted discussion with a confederate playing the role of an influential peer. The participants were exposed to a confederate under one of four conditions, varying in gender and sexual attitude. The sexual attitude that the confederate held was either strictly liberal or strictly conservative. Following the discussion period, the participants completed three surveys that assessed their (1) sexual practices and attitudes, (2) their anxiety, and (3) subjection to peer influence. One of the two hypotheses was found to be significant, revealing that the male confederate had an influence on the participants anxiety $F(1,33)=4.672$; $p=.039$. This study not only aims to understand women's sexuality in terms of peer influences, but also aims to create an importance surrounding women's sexual

Distribution of Coastal Bottlenose Dolphins, *Tursiops truncatus*, along the Northern South Carolina Coast in Relation to Tidal Stage, Season, and Distance from Inlets (Oral Presentation)

Rachel Unger (Marine Science, Biology)

Faculty Research Mentor: Robert Young, Marine Science

Fine-scale distribution patterns of coastal bottlenose dolphins (*Tursiops truncatus*) have not been previously examined along the northern South Carolina coast, but this is now possible based on sightings from two years of coastal survey effort by Coastal Carolina University researchers (Silva 2016, MS Thesis). The objective of this study was to identify predictive spatial and temporal patterns for the distribution of coastal dolphins. Specifically, we examined sighting location, distance from the nearest inlet, season, and tidal stage. Sightings occurred during shore-parallel photo-identification surveys centered on either Murrells Inlet (2013-2015) or Little River, SC (2014-2015). Collectively, these surveys covered approximately 100 km of the coast at two distances from shore, 0.5 and 1.5 km. Surveys followed the robust design with three secondary surveys per primary period and primary periods spaced approximately ten weeks apart. Preliminary analyses indicate that season, tidal stage, and distance from the nearest inlet all impact sighting patterns.

“This is Us”: The Effects of Diverse Casting in an NBC Smash Hit (Oral Presentation)

Connor Uptegrove (Communication)

Faculty Research Mentor: Wendy Weinhold, Communication

Television networks have been forced to adapt the quality of their shows as the quantity of providers expands. This change is exemplified in the NBC show *This is Us*, which has received multiple television awards, reported record viewership, and earned critics praise. This qualitative research project analyzes the success of *This is Us* through a study of audience interaction, especially audiences involved in collegiate cultural arts. Textual analysis of the show’s most-watched episodes and in depth interviews with active viewers who are studying a cultural art at a collegiate institution identifies themes that point to the show’s success at connecting with diverse audiences. Conclusions are drawn about the importance of diverse casting and authentic performances for critically minded audiences.

The search for bacteriophages: the cure for antibiotic resistant bacteria might be on the students at the campus of Coastal Carolina University.

Lisha Van Onselen¹, (Chemistry) Giovanna Leone² (Exercise and Sport Science), Lisa Pieterse³ (Biology) and Prof Paul E. Richardson¹

Faculty Research Mentor: Paul E. Richardson, Biochemistry

This study aimed to investigate the bacteriophage population that exists among students at Coastal Carolina University. Bacteriophages are viruses that can only infect bacterial cells. There has been a recent trend in medicine to harness these lytic agents to help fight bacterial infections. For this study swabs were taken from student volunteers from the ear and the nose area. Microbial testing using plaque assays and molecular tests including PCR along with gel electrophoresis were methods used to determine if *Staphylococcus aureus* and *Escherichia coli* bacteriophages were present. The purpose of the study is to better understand the population dynamics of our campus and to collect samples that might be used to help fight antibiotic resistant strains of bacteria.

The Effects of Social Media on Interpersonal Relationships (Oral Presentation)

Houston Vandiver (Communication)

This study examines the effects of social media activity on platonic and romantic relationships. More specifically, this study examines the positive and negative functions of social media within interpersonal relationships. The advancements made in communicative technology in the last decade encouraged a rapid revolution in the methods by which humans communicate. The introduction of social media and a new wave of culture completely changed the way humans experience and develop social relationships. Data collected through a series of in-depth interviews provides that social media by and large provides a unique and positive experience associated with both platonic and romantic relationships. However, there

is a marginal portion of results that contradict the benefits of social media and interpersonal relationships, instead showing that it has negative impacts. The negative consequences of social media presence within relationships includes increased feelings of attachment and jealousy, paranoia, and a decreased sense of self-esteem.

The Effects of Hypoxic Incubation on Internal Timing Mechanisms in Leopard Geckos (*Eublepharis macularius*) (Poster Presentation)

Cheyenne Vaughan and Peyton Mueller (Interdisciplinary Studies)
Faculty Research Mentor: Matthew Murphy, Psychology

This study investigated internal timing mechanisms in geckos incubated in hypoxic conditions. Leopard geckos (*Eublepharis macularius*), like all reptiles, are ectothermic creatures, meaning they are cold-blooded, relying on external heat to regulate internal body temperatures. Several juvenile geckos were tested in a T-maze using a mid-session reversal task to display discriminative learning through positive reinforcement. Geckos were required to make a choice between a blue and a white card at the end of each choice arm. For the first half of the session, one of these (e.g., blue) was the S+ and consistently reinforced with heat; at the mid-point of the session, the correct stimulus switched, so they would need to pick the other stimulus (e.g., white) to get heat. We will investigate whether geckos can use internal timing to make this switch, and whether incubation in hypoxic conditions affects this cognitive ability. Results and implications will be discussed.

Histological Analysis of Limb Bud Development during Regeneration in Fiddler Crabs (Poster Presentation)

Emeline Ward (Marine Science, Biochemistry)
Faculty Research Mentor: Eric Rosch, Marine Science

Invertebrate survival depends on the ability to regain locomotive and defensive capabilities lost during injury or autotomization. When these systems are lost there is rapid physiological response by the organism to regain functionality. This study used the fiddler crabs *Uca pugilator* and *Uca pugnax* to examine tissue morphology during regeneration. Crabs missing pereopods were collected from marshes and kept isolated to prevent injury or further loss of limb by aggressive interactions. Once a limb bud developed and reached a predetermined size it was excised. For histological preparation, excisions were submerged in formaldehyde, embedded in paraffin, and sectioned for staining. All limb buds shared three characteristics: an abundance of mesenchymal cell clusters, pinnate muscle tissue arrangement, and a double-inward fold of the limb in development. Cheliped buds exhibited defined chela development while the carpus and merus showed patterns similar to the ambulatory leg buds folding in on each other.

Trophic Levels Of Oceanic and Estuarine Bottlenose Dolphins in South Carolina from Stable Carbon and Nitrogen Isotopes (Oral Presentation)

Hannah Wareheim (Marine Science)
Faculty Research Mentor: Robert Young, Marine Science

Estuarine and oceanic bottlenose dolphins occupy different ecological habitats and exhibit different foraging behaviors. If they feed on different prey species or trophic levels, their ecological role may differ between habitats. We investigated the trophic levels of estuarine and coastal bottlenose dolphins using stable isotope ratios of nitrogen and carbon from archived muscle tissue of dolphins that stranded in South Carolina. Stranded dolphins were classified as estuarine or coastal based on stranding location and season. ^{13}C results will be used to support stock classifications, because a lower ratio is expected from estuarine systems. The ^{15}N analyses will be used to compare trophic levels of the estuarine and coastal dolphins, with a higher ratio corresponding to a higher trophic level. In addition to the ecological

implications, this study addresses whether stranded dolphins can reliably be assigned to an estuarine or coastal stock, potentially increasing the pool of individuals for genetic analysis.

Skin Lesion Prevalence on Bottlenose Dolphins (*Tursiops truncatus*) from Coastal Waters Near Murrells Inlet, SC. (Oral Presentation)

Hannah Weinberg (Marine Science)

Faculty Research Mentor: Robert Young, Marine Science

The prevalence of skin lesions on cetaceans, especially dolphins, can be an indication of the health of the population and the surrounding marine environment. As sentinels that frequent coastal areas, exposure to anthropogenic factors, such as pollution, and environmental factors, such as water temperature, can affect the dolphin's ability to combat disease and other lesion types. Skin lesions were investigated for bottlenose dolphins, *Tursiops truncatus*, in coastal waters near Murrells Inlet, SC, using photographs from year-round coastal surveys conducted between 2013 and 2015. Lesion types were categorized based on previous studies by Hart et al. (2012): black, pale, cloudy, lunar, dark-fringed, white-fringed, orange, tattoo-like, lacaziosis, and spotted. We hypothesized that dolphins will exhibit the highest prevalence of skin lesions during the spring season (March-May), with the most common type of skin lesion being dark-fringed. Results will be presented and will form a baseline for continued monitoring of dolphin health and water quality in the coastal waters of northern South Carolina.

The Role Social Media Plays in Crisis Communication (Oral Presentation)

Louise Wilson (Communication)

Faculty Research Mentor: Andrea Bergstrom, Communication

This paper explores the role that social media plays throughout crisis communication specifically among college age students at Coastal Carolina University. Due to the fact technology is constantly evolving, the generation that has grown up with technology is very dependent on social media in order to keep up to date on their social lives as well as learn about important news as soon as it happens. This paper examines the most popular forms of social media and the influence they have when a crisis occurs based off of whether or not most people use that form of media to get their information. Journalists have the ability to share information about a crisis as soon as it happens via popular social sites such as Facebook, Twitter, Instagram, or Snapchat, as opposed to years before when a traditional news cast or news article would have to be written.

Caravaggio and Del Monte: A Patronage and Friendship (Oral Presentation)

Jenny Wofford (Anthropology)

Faculty Research Mentor: Stephanie Miller, Language and Intercultural Communication

Michelangelo Merisi da Caravaggio spent six years, from 1595-1601, living in the palace of the Cardinal Francesco Maria Bourbon del Monte Santa Maria out of his fourteen years in Rome, 1592-1606. This research will look at the homoerotic subculture that Del Monte and Caravaggio inhabited in early seventeenth century Rome through the art Caravaggio created while living with Del Monte. The choice of display for these pieces in Del Monte's multiple homes comes into question, along with the interesting architectural features of these homes. This research will explore these spaces and the function of the rooms in which these pieces of art would have lived. The following will attempt to fill the gap of information on the homoerotic lifestyle that Del Monte and Caravaggio shared.