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2016 Undergraduate Research Competition Program

Coastal Carolina University

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COASTAL CAROLINA UNIVERSITY



Undergraduate Research Competition

April 12-13, 2016

The Undergraduate Research Competition is a spring tradition at Coastal Carolina University. This year, students and faculty mentors from 21 different majors and all university colleges have worked to produce over 70 presentations. These are the results of months, and in some cases, years of effort on undergraduate research projects, and demonstrate the strength of experiential learning at CCU. Congratulations, presenters!

Program Overview

Tuesday, April 12, 2016

2:30-4:00 PM Poster Session I, Lib Jackson Student Union Atrium

Wednesday, April 13, 2016

9:30-11:00 AM Poster Session II, Lib Jackson Student Union Atrium

12:20-5:40 PM Oral Presentations, Brittain Hall, 1st Floor

Concurrent Event

Senior Exhibition (portfolios from graduating Graphic Design and Art Studio majors)

- Portfolio 1: April 8-April 19, 2016, Rebecca Randall Bryan Art Gallery
- Portfolio 2: April 25- May 6, 2016, Rebecca Randall Bryan Art Gallery

Individual Presentations and Abstracts can be found on the following pages

2016 Undergraduate Research Competition
ORAL PRESENTATIONS
Brittain Hall, First Floor

WEDNESDAY, APRIL 13, 2016

Time	BRITAIN HALL RM 101	BRITAIN HALL RM 112	BRITAIN HALL RM 114
12:20 PM	<p>Juliane Caughron & Abbey Chaney "Evaluation of Variables Effecting Foraging Success Rates in Eastern Brown Pelicans (<i>Pelecanus occidentalis carolinensis</i>) on the South Carolina Coast" <i>Faculty Mentor: Eric Rosch</i></p>	<p>LaVasia Jackson "The Impostor Phenomenon and Racial Identity" <i>Faculty Mentor: Maggi Morehouse</i></p>	<p>Maryland Lewis "Physical Factors Connected to Hypoxia in Long Bay" <i>Faculty Mentors: Diane Fribance and Louis Keiner</i></p>
12:40 PM	<p>Kaitlyn Powalie & Abby Boytos "When Love Is Not Mutual: The Experience of Rejectees and Rejecters" <i>Faculty Mentor: JongHan Kim</i></p>	<p>Meagan Denny "Norway's Prison System: Investigating Recidivism and Reintegration" <i>Faculty Mentor: Richard Aidoo</i></p>	<p>Brooke Campbell "The Effects of Sediment Compaction on Ghost Crab Burrowing Behavior" <i>Faculty Mentor: Eric Rosch</i></p>
1:00 PM	<p>Beck Aynaev, Raegan Kaufman, Richard Sampson and Tryell Brown "Economic Analysis of Proposed Murrells Inlet Bike Path" <i>Faculty Mentor: Robert Salvino</i></p>	<p>Rayne Newswanger "Vertical Distribution of Demersal Fish Larvae in North Inlet Estuary, SC." <i>Faculty Mentor: Juliana Harding</i></p>	<p>Emily Carter "Testing the Selfish Herd Hypothesis in Fiddler Crabs" <i>Faculty Mentor: Eric Rosch</i></p>
1:20 PM	<p>Nicole Kuhn, Samuel Treacy, Alioune Diagne and Rashad Baker "Adding Value to Regional Transit Systems in a Seasonal Tourist Destination" <i>Faculty Mentor: Robert Salvino</i></p>	<p>Rachel Houston "Communication and Citizen Participation in Southern Local Politics: A Disconnect Between Municipalities and Constituents" <i>Faculty Mentor: Adam Chamberlain</i></p>	<p>Nicholas Picha "Exposing Artemia Salina to Chattonella Subsalsa, a Toxicity Test" <i>Faculty Mentors: Eric Koepfler and Amy Grogran</i></p>
1:40 PM	<p>Samantha Bergold "Malum Ex Machina: Violence and Technology in Media" <i>Faculty Mentor: Wes Fondren</i></p>	<p>Bridges Q&A Session</p>	<p>Kaela Moon "Ontogenetic Timing of Sexual Dimorphism in Juvenile Boa Constrictors" <i>Faculty Mentor: Scott Parker</i></p>
2:00 PM	<p>Amy Thomas & Rachel Drummond "Counterterrorism or Vigilantism? The Cyber War Between ISIS and Anonymous" <i>Faculty Mentor: Joseph Fitsasankis</i></p>	<p>Christopher L. Pierpont "Characterization of an Essential Chloroplast Protein" <i>Faculty Mentor: Michelle Barthet</i></p>	<p>Harley Coates & Larissa Martin "Heavy Metal Concentration in Donax Clams Found in Myrtle Beach Analyzed Using Atomic Absorbtion" <i>Faculty Mentor: Kevin McWilliams</i></p>

Time	BRITAIN HALL RM 101	BRITAIN HALL RM 112	BRITAIN HALL RM 114
2:20 PM	<p>Christopher Wright "Johann Sebastian Bach's Signature Loops: Interpreting the Underlying Temperament System of the Well-Tempered Clavier" <i>Faculty Mentor: Eric Crawford</i></p>	<p>Maria Acosta Questioning the Quality of 'Top Apps' for Early Childhood Math" <i>Faculty Mentor: Todd Cherner</i></p>	<p>Jourdan Lakes "Development of a [2] Catenane Synthetic Method and a Student Beliefs Survey for a Hybrid Organometallics Course" <i>Faculty Mentor: Kevin McWilliams</i></p>
2:40 PM	<p>Briana Laws "Obstructive Sleep Apnea: Testing the Accuracy of the SLEEPMED Questionnaire" <i>Faculty Mentor: Sharon Thompson</i></p>	<p>Heather Banning "Olfactory Effects on Selective and Sustained Attention and Working Memory" <i>Faculty Mentor: Terry Pettijohn</i></p>	<p>Steve Butler "Country Cooking and Sunday Dinner: Southern Foodways" <i>Faculty Mentor: Maggi Morehouse</i></p>
3:00 PM	<p>Steven Carruth "Examining the Four Types of Cyclists in the Grand Strand" <i>Faculty Mentor: Sharon Thompson</i></p>	<p>Erin Huggins "Discrimination in the Era of Preventive Medicine: An Examination of Physician Bias in Recommendations for Cancer Genetic Testing" <i>Faculty Mentor: Lisa Winters</i></p>	<p>Lyndsay Young "Genetic Analysis of ROS-Mediated Neurodegeneration in C. elegans" <i>Faculty Mentor: Daniel Williams</i></p>
3:20 PM	<p>Kerry Dittmeier "Souls Without Solace - Bridging the Gap Between Perceptions and Reality" <i>Faculty Mentor: Sharon Thompson</i></p>	<p>Alioune Diagne "Economic Development in Africa" <i>Faculty Mentor: Robert Salvino</i></p>	<p>Kyle Massie "Bottlenose Dolphin (<i>Tursiops truncatus</i>) Association Patterns Examined off the Coast of North and South Carolina" <i>Faculty Mentor: Rob Young</i></p>
3:40 PM	<p>DeVariay White "Assessing Lifestyle and Hip Range of Motion as it Relates to the Prevalence of Low Back Pain" <i>Faculty Mentor: Sharon Thompson</i></p>	<p>Dexter Bracken "The Effects of Efficacy on Activism Participation in LGBTQ+Students" <i>Faculty Mentor: Emlee Quickel</i></p>	<p>Meghan Troup "Decreased Mixing Conditions during Low Oxygen Events in Long Bay, South Carolina: 2006-2014" <i>Faculty Mentors: Erin Hackett, Diane Fribance and Roi Gurka</i></p>
4:00 PM	<p>Christina Auth "An Evaluation of Peer Health Education Programs at a University and the Impacts on Both Students and Peer Educators" <i>Faculty Mentor: Sharon Thompson and Jennifer Maddox</i></p>	<p>Edward Brown "Bright Light and Altruism" <i>Faculty Mentor: Joan Piroch</i></p>	<p>Emily Forzono "Dry Weight Energy Density of Prey Fishes in the Nearshore Waters of the Upper Niagara River and Buffalo Harbor" <i>Faculty Mentor: Derek Crane</i></p>

Time	BRITAIN HALL RM 101	BRITAIN HALL RM 112	BRITAIN HALL RM 114
4:20 PM	<p>Rachel Liming “The Acute Effect of Different foam Rolling Speeds on Iliotibial Band Flexibility” <i>Faculty Mentor: Jason Smith</i></p>	<p>Taylor Genander “Mindfulness Based Stress Reduction Techniques Among College Students” <i>Faculty Mentor: Joan Piroch</i></p>	
4:40 PM	<p>Taylor O’Hara “Consumerism in the City: The Ways in Which Fashion is Both Limiting and Empowering in <i>Sex and the City</i>” <i>Faculty Mentor: Cynthia Port</i></p>	<p>Rebecca Cwalina “Exploring the Correlation Between Personality Traits and Academic Performance” <i>Faculty Mentors: Deborah Breede and Wes Fondren</i></p>	<p>Maria Peters “Wavelets and Image Noise Reduction” <i>Faculty Mentor: Menassie Ephrem</i></p>
5:00 PM	<p>Steven Webster “Providing America with Live Sex Dolls: Human Trafficking” <i>Faculty Mentor: Linda Martin</i></p>	<p>Molly McAllister “Social Media’s Effect on College Enrollment and Student Decisions” <i>Faculty Mentor: Monica Fine</i></p>	<p>Willie Park “The JOVE INITIATIVE” <i>Faculty Mentor: Louis Rubbo</i></p>
5:20 PM	<p>Teresa Lickfeld “Effectiveness of Social Skills Instruction in Young Students with Developmental Delays” <i>Faculty Mentor: John Delpont</i></p>	<p>Rachel Hansen “The Inalienable Right to a Peaceful Death” <i>Faculty Mentor: Amanda Grefski</i></p>	

2016 Undergraduate Research Competition
POSTER PRESENTATIONS
Lib Jackson Student Union - Atrium

Session I: Tuesday, April 12, 2016, 2:30pm – 4:00pm

Session II: Wednesday, April 13, 2016, 9:30am – 11:00am

POSTER SESSION I

Tuesday, April 12, 2016, 2:30pm – 4:00pm

JENNIFER BALLIET, Intelligence and National Security Studies (#1)

The Reconstruction of Union Pier Cruiseship Terminal in Charleston, SC

Faculty Research Mentor: Mikel Norris, Politics and Geography

HALEY CODERRE, Marine Science (#3)

Nutrient Effects on Marsh System Integrity

Faculty Research Mentor: Angelos Hannides, Marine Science

JOANNA GOLEY, Marine Science (#5)

Traces of Extreme Flood in Oxbow Lake Deposits of the Pee Dee River

Faculty Research Mentor: Zhixiong Shen, Marine Science

JONATHAN JONES, Marine Science (#7)

Stratigraphy and Geochronology of the Pleistocene Paleo-strand Plain in the Coast of Northeastern South Carolina

Faculty Research Mentors: Zhixiong Shen, Marine Science and Eric Wright, Marine Science

SARAH KEFFER, Marine Science (#9)

Impacts of Sand Grain Variability and Biogeochemical Activity in Coral Reef Sediment Characteristics

Faculty Research Mentor: Angelos Hannides, Marine Science

BRIANA LAWS, Biochemistry (#11)

Impact of Stage of Change and Gender on Motivation to Participate in Recreational Activity and Perceptions of Health

Faculty Research Mentor: Sharon Thompson, Health Sciences

DANIELLE LUDLAM, Exercise and Sport Science (#29)

Energy Expenditure of Golfing: An Alternative Form of Physical Activity?

Faculty Research Mentor: G. William Lyerly, Exercise and Sport Science

AMY POWERS, Biochemistry (#13)

Investigating Phage Activity in Coastal Carolina University Students

Faculty Research Mentor: Paul Richardson, Chemistry and Physics

ERIC ROBLES, Biology (#16)

Short-term Memory Deficits: Study Using Fruit Fly *Drosophila* Alzheimer's Disease Model

Faculty Research Mentor: Fang-Ju Lin, Biology

STEVEN ROSEN, Biology (#19)

Collective Prey Capture by Juvenile Venus Flytraps (*Dionaea muscipula*)

Faculty Research Mentor: John Hutchens, Biology

NEHEMIAH STAFFORD, Chemistry (#23)

Comparison of Aroma Profiles Between Gluten-free and Gluten-containing Beers Using SPME in Combination with GCMS

Faculty Research Mentor: Drew Budner, Chemistry and Physics

MEGHAN STICKLE, Biochemistry (#25)

Pharmacological Analysis of ROS-mediated Neurodegeneration in *C. elegans*

Faculty Research Mentor: Daniel Williams, Biology

AMY WARD, Biology (#26)

Effect of Taurine on Human Huntington's Disease using Fruit fly *Drosophila* Model

Faculty Research Mentor: Fang-Ju Lin, Biology and Tianyi Wu, Biology

PHILIP WEBER, Marine Science (#28)

Treatment Effects on ²²⁴Ra Production during Laboratory Sediment Equilibrations

Faculty Research Mentor: Richard Peterson, Marine Science

MICHELLE WEST, Biology (#30)

***C. elegans* as a Model for Galactosemia.**

Faculty Research Mentor: Daniel Williams, Biology

POSTER SESSION II

Wednesday, April 13, 2016, 9:30am – 11:00am

ABBY BOYTOS, Psychology (#2)

The Effects of Religion and Career Priming on Problem-Solving Persistence in College Students

Faculty Research Mentor: Terry Pettijohn, Psychology

MEGAN EVANS, Psychology (#4)

Effects of Group Connectedness on Campus Climate among LGBTQ+ Individuals Involved in a Sorority or Fraternity

Faculty Research Mentor: Emalee Quickel, Psychology

NELDA GLAZE, Elementary Education (#6)

The Relationship between Assigned Homework and its Purposes

Faculty Research Mentor: Catherine Scott, Education

REBECCA GREEN, Marine Science (#8)

Iceberg Scours in the Gulf of Maine

Faculty Research Mentor: Jenna Hill, Marine Science

MICHAELA HARRINGTON, Marine Science (#10)

Biological Parameters and Management Strategies Used to Establish Successful Marine Protected Areas

Faculty Research Mentor: George Boneillo, Marine Science

ALECIA HOSTETTLER, Psychology (#12)

Inattentional and Change Blindness in ADHD

Faculty Research Mentors: Terry Pettijohn, Psychology and Fang-Ju Lin, Biology

VICTORIA LAMBERT, Public Health (#14)

Sleep and Stress among Undergraduates: Are there Differences by Gender, Age, or Race?

Faculty Research Mentor: Sharon Thompson, Health Sciences

AMY MOODY, Marine Science (#15)

Organic and Metal Sediment Contamination in Winyah Bay, SC

Faculty Research Mentor: George Boneillo, Marine Science

KAITLIN MOREHEAD, Psychology (#17)

Gender Differences in Antisocial Personality Traits and Behavior

Faculty Research Mentor: Andrew Terranova, Psychology

CORAL MULLEN, Marine Science (#18)

Emergence and Transport of Sediment-Dwelling Organisms over an Intertidal Oyster Reef

Faculty Research Mentor: Keith Walters, Marine Science

STEPHEN PENTON, Computer Science and Applied Mathematics (#20)

Ocean Surface Effects on Refractivity Inversions Using Genetic Algorithms

Faculty Research Mentor: Erin Hackett, Marine Science

SAMANTHA STADY, Marine Science (#21)

Synthesis of the Tricyclic Core of Flinderole C from o-Iodoaniline

Faculty Research Mentor: Bryan Wakefield, Chemistry and Physics

MEGAN TOWNSEND, Psychology (#22)

Associations between Personality and Faith with Psychosocial and Academic Adjustment

Faculty Research Mentor: Andrew Terranova, Psychology

COURTNEY WEEKS, Exercise and Sport Science (#24)

The Acute Effects of 30- and 90-Seconds of Static Stretching on Vertical Jump Performance

Faculty Research Mentor: Jason Smith, Kinesiology

KRISTINA WOODFORD, Marine Science (#27)

Monitoring of Winyah Bay in Georgetown, SC

Faculty Research Mentor: George Boneillo, Marine Science

2016 Undergraduate Research Competition

Abstracts

(Alphabetical by Presenter)

Questioning the Quality of “Top Apps” for Early Childhood Math (Oral Presentation)

Maria Acosta (Early Childhood Education)

Faculty Research Mentor: Todd S. Cherner, EC/EL/Literacy

As technology continues to impact our everyday lives, public schools are responding by integrating it into classroom instruction. Examples of this integration include lessons that blend traditional face-to-face instruction with digital learning. Moreover, school districts are supporting this type of instruction by going 1:1, which means districts have supplied all of its teachers and students with a mobile device to use. Often times, these devices are tablets that allow applications (apps) to be loaded onto them. The question then arises, which apps are the best? This session will present a study that investigated apps designed specifically for early childhood math. The researcher analyzed apps recommended by websites using a validated instrument, and she will conclude the presentations with making recommendations for future educators.

An Evaluation of Peer Health Education Programs at a University and the Impacts on Both Students and Peer Educators (Oral Presentation)

Christina Auth (Public Health)

Faculty Research Mentors: Sharon Thompson and Jennifer Maddox, Health Sciences

Reaching out to the diverse health needs of today's youth requires dynamic approaches to health education. Peer Education programs may be an effective strategy for delivering sensitive health information from student to student. This assessment reviewed several Peer Health Education programs at Coastal Carolina University and the impact they had on both students and peer educators. Using the most recent data from the ACHA/NCHA, education programs and presentations were addressed to students based on the most prevalent health concerns at the university. A survey of both students and peer educators was developed to examine their experience throughout the duration of the programs. Peer educators led programs on sexual health, smoking cessation, nutrition, and physical activity. A post survey was developed for peer educators to analyze their experience. A pre/post survey was developed for students to examine changes in knowledge and attitudes towards the peer education process. Results will be discussed.

Economic Analysis of Proposed Murrells Inlet Bike Path (Oral Presentation)

Beck Aynaev (Economics) Raegan Kaufman, Richard Sampson and Tyrell Brown

Faculty Research Mentor: Robert Salvino, Finance and Economics

Murrells Inlet 2020, a non-profit organization vested in development and preservation of Murrells Inlet is proposing a bike path project in the area. The effort would upgrade existing bike lanes with renewed labeling, clear striping, and reflective globes. New bike paths will be laid connecting HWY17 Business with the Bypass, running around the Tideland Hospital, and connecting to the Wacca Wache Marina. The proposed project has great support among the community, and our research aims to quantify its economic costs and benefits. A well laid-out bikepath would increase walkability of the area, decrease vehicle traffic and congestion, and decrease spending on fuel. Beyond economic benefits of alternative transportation are the environmental benefits of reduced emissions, and health benefits associated with active form of transport. The proposed bikepath is also an investment in infrastructure, supporting a bettered stormwater drainage system, with possibility of positive effect on property values.

The Reconstruction of Union Pier Cruise ship Terminal in Charleston, SC (Poster Presentation)

Jennifer Balliet (Intelligence and National Security Studies)

Faculty Research Mentor: Mikel Norris, Politics and Geography

The South Carolina State Ports Authority plans to make a \$35 million dollar expansion to the Union Pier cruise ship port in the historic district of downtown Charleston, SC. Many local interests groups are concerned about the environmental impact that will increase due to the increase of docked cruise ships. Through extensive research I have concluded the current environment impact of each cruise ship and how the reconstruction will affect the historic district of downtown Charleston, SC which should be of interest to the South Carolina Ports Authority, Judge Anderson, and anyone else residing in Charleston, SC.

Olfactory Effects on Selective and Sustained Attention and Working Memory (Oral Presentation)

Heather Banning (Psychology)

Faculty Research Mentor: Terry Pettijohn, Psychology

Sustained attention and working memory are two essential traits that affect people's abilities to perform every day activities, such as pay bills, learn new concepts during lectures, perform office duties, change the oil in a car, etc. There have been several studies that have shown the effects of outside sound and visual distractions on attention and working memory. There are few experiments showing the effects of the olfactory system with regard to attention and short term memory. This study examines the effect of sustained attention and working memory when a person is in a room filled with a specific odor: spearmint, cupcake, or vinegar. Based on previous research, it is hypothesized that the participants in the room with the spearmint odor will have better sustained attention and working memory scores. This study is currently being conducted and approximately fifty college students at CCU will serve as the participants in this study.

Malum Ex Machina: Violence and Technology in Media (Oral Presentation)

Samantha Bergold (Communication)

Faculty Research Mentor: Wes Fondren, Communication, Languages, and Cultures

The analysis looks in-depth on how violence is shown in television and film with the content focusing on technology. The content being analyzed is all of the current episodes of Black Mirror and the film, Ex Machina. The codes are violence being verbal, threats, and physical. The violence is then categorized by a person acting on a person, a person acting on the machine, the machine acting on a person, or machine acting on a machine. The codes will then be compared to show how the violence varies in Black Mirror and Ex Machina. The analysis uses the Norm Violation Theory of Violence Enjoyment. By using this theory, the reader can then further uncover why violence is used in Black Mirror and Ex Machina from the contents violence focusing on violating what's socially acceptable when using technology.

The Effects of Religion and Career Priming on Problem-Solving Persistence in College Students (Poster Presentation)

Abby Boytos (Psychology)

Faculty Research Mentor: Terry Pettijohn, Psychology

The current study investigated the ways in which religion and career could be used to increase self-control. The study used problem solving to measure self-control among 60 college students. Participants were primed by taking the religion or career and family implicit association tests which also acted as a self-control depletion task, before attempting to solve three creative analytical problems. Amount of time spent trying to solve the problems was used to measure self-control. All tasks were done on a computer, and participants were told a cover story that the experiment was studying the effects of using technology on problem-solving ability. Results indicate that while strong religious beliefs can enhance self-control and lead college students to work longer on solving problems, briefly priming participants with either religion or career can also have similar effects irrespective of religious backgrounds and beliefs.

The Effects of Efficacy on Activism Participation in LGBTQ+ Students (Oral Presentation)

Dexter Bracken (Psychology)

Faculty Research Mentors: Emalee Quickel, Psychology and Lisa Winters, Sociology

Much of the existing research on activism indicates that there are differential factors that impact who becomes involved with activism, what movements they get involved with, and what form their activism takes (e.g. DiGrazia, 2014). One factor previously investigated is sense of efficacy, both on an individual and group basis. Currently little research exists on the perception of efficacy in relation to differing forms of activism. This study will expand on existing activism research by examining the relationship between perceived efficacy and willingness to engage in conventional and unconventional forms of activism, particularly as it relates to various movements and organizations. LGBTQ+ college students were selected as the population of interest to allow for exploration of the effects of intersectionality on movement selection, activism form selection, and perception of self and group efficacy.

Bright Light and Altruism (Oral Presentation)

Edward Brown (Psychology)

Faculty Research Mentor: Joan Piroch, Psychology

Sunlight and other sources of light influence body function and human and animal behavior. Light therapy has been investigated as it influences seasonal affective disorder, depression, and other behaviors and activities. This research was designed to investigate altruism as influenced by bright light. The researcher utilized an independent 2-group design. The sample included students at Coastal Carolina University. Data were collected in a standard research lab and the participants in the experimental group were exposed to a 10,000 lux light box for 30 minutes. Subjects in the control group were exposed to a placebo light source. During light exposure, participants completed simple crossword puzzles. Afterwards, subjects completed a

demographic survey and the Helping Attitude Scale (HAS). Results of an independent t-test were discussed relative to the hypothesis that bright light would increase altruism. Implications of this research include the benefits of sunlight for influencing some prosocial behaviors, and the importance and relevance of continuing this type of research. Application of these results and related research findings could improve the daily lives of individuals around the world.

Country Cooking and Sunday Dinner: Southern Foodways (Oral Presentation)

Steve Butler (History)

Faculty Research Mentor: Maggi Morehouse, History

This research paper will be on southern foodways and how they have evolved. This change has occurred across economic and geographic groups from the colonial period to the present. Various dishes have come as a result of the intermingling of social classes and the regions in which they lived. I intend to show the diverse methods used to prepare these foods as well as, explore the dishes that are specific to different regions detailing their cultural and economic impact. I will use primary scholarly sources such as "The Dixie Cook Book" by Estelle Woods Wilcox and a collection of different first-hand accounts through interviews with the "Southern Foodways Alliance". I will also utilize secondary historical sources such as, "An Irresistible History of Southern Food" by Rick McDaniel which gives detailed origins of various recipes in conjunction with literature compiled by Marcie Ferris in her book, "Edible South".

Examining the Four Types of Cyclists in the Grand Strand (Oral Presentation)

Steven Carruth (Public Health)

Faculty Research Mentor: Sharon Thompson, Health Sciences

The City of Myrtle Beach is looking for ways to foster a cycling community in the area as it hopes to increase its visibility as a sport tourism destination. In order to examine attitudes and beliefs regarding cycling in this area and determine how to use resources in a way that maximizes impact, a survey was developed which categorizes participants into four categories as defined by a study from Portland State University. These categories included: Fearless, Confident and Enthused, Interested but Concerned, and No Way No How. Upon categorization, it was possible to see largest categories as well as major interests and concerns. The survey was administered by public health students at a city-sponsored Cyclovia event in the Fall of 2015 (N = 253). Results will be discussed.

Testing the Selfish herd Hypothesis in Fiddler Crabs (Oral Presentation)

Emily Carter (Marine Science)

Faculty Research Mentor: Eric Rosch, Marine Science

In an attempt to reduce individual predation risk, organisms often aggregate with their conspecifics, resulting in the formation of 'selfish herds'. It is a widely accepted notion that by being closer to others, individuals reduce their likelihood of being attacked by a predator and that as a result, individuals aim to position themselves within a dense group, even if this means moving closer to the predator. This highlights the fitness advantage that must be associated with such positioning, as opposed to being dispersed from the group or even at a more peripheral location. By observing fiddler crab herd structure and the feeding and waving behaviors of both central and peripheral males, we find evidence to support the hypothesis that, resulting from relative predation risk, central males have a higher rate of feeding than peripheral males. However, no significant variation was found in the sex or size composition of the herds.

Evaluation of Variables Effecting Foraging Success Rates in Eastern Brown Pelicans (*Pelecanus occidentalis carolinensis*) on the South Carolina Coast (Poster Presentation)

Juliane Caughron and Abbey Chaney (Marine Science)

Faculty Research Mentor: Eric Rosch, Marine Science

Eastern brown pelicans (*Pelecanus occidentalis carolinensis*) perform an aerial plunge as their primary mode of food capture. Many factors can influence the probability of a successful foraging attempt, such as approach height and distance from shore. The aim of the current study was to ascertain the ideal conditions for a foraging attempt. Variables of importance were concluded to be age class, approximate distance from shore, approach height of dive, and occurrence of an obvious foraging event by other species. A binomial logistic regression analysis was used to predict success rates under different conditions. Overall, dive attempts were successful 30.64% of the time, and optimal conditions consisted of an adult pelican attempting a dive during a high tide foraging event, beyond the breakers from 4.6 m or above. There were 12 different combinations of measured conditions and the vast majority of foraging attempts (77%) consisted of 4 separate combinations.

Heavy Metal Concentration in Donax Clams Found in Myrtle Beach Analyzed Using Atomic Absorption (Oral Presentation)

Harley Coates (Chemistry) and Larissa Martin (Chemistry)

Faculty Research Mentor: Kevin McWilliams, Chemistry and Physics

The coquina clam, *Donax variabilis*, is a ubiquitous invertebrate along the eastern seaboard. Due to its placement in the food chain and intertidal habitat, it is an ideal indicator for the health of the surrounding ecosystem. The clams, along with water and sediment samples, were collected from three separate locations in Myrtle Beach, SC and analyzed for heavy metals using an atomic absorption (AA) instrument. Heavy metal concentration is statistically analyzed and evaluated in terms of chemical composition with regard to zinc, copper, lead, manganese, nickel, iron, and chromium. This is a temporal study to see how the concentration changes with time and human presence. It is hypothesized that the concentrations will increase during the summer months due to increased foot and vehicle traffic from tourists.

Nutrient Effects on Marsh System Integrity (Poster Presentation)

Haley Coderre (Marine Science)

Faculty Research Mentor: Angelos Hannides, Marine Science

Marshes serve as buffers between environments, as nurseries, and as homes to diverse species of organisms. They are important parts of our ecosystem that urbanization has negatively impacted in recent years through pollution and even deliberate depletion. Excess addition of nutrients, usually due to pollution, can have detrimental effects both to marsh systems and individual native species. The goal of this research is to analyze nutrient effects on marsh integrity. This will be accomplished by an eutrophication literature metanalysis, with a focus on nitrogen inputs, so as to identify data and research gaps. This will be done to create a process- such as sediment analysis or water sampling to track chlorophyll levels- used to determine its impact on marsh structure. This approach will allow us to efficiently identify problems and their solutions that will help preserve marsh environments both for human and native species' health.

Exploring the Correlation Between Personality Traits and Academic Performance (Oral Presentation)

Rebecca Cwalina (Communication)

Faculty Research Mentor: Deborah Breede, Communication, Languages, and Cultures

Students at a medium-sized, public institution were given a 17-item questionnaire on specific personality traits, academic performance, and self-perception of intellect. The questionnaire's items clarified where each student fell within an extroversion index and a perception of intelligence index. These answers were then compared to each student's GPA to determine whether or not there is a correlation between introversion/extroversion and academic performance and how that relates to how the students' self perception of intellect. No correlations were found among the three factors. However, the lack of correlation between self-perceptions of intelligence and academic performance suggests topics for future research.

Norway's Prison System: Investigating Recidivism and Reintegration (Oral Presentation)

Meagan Denny (Political Science)

Faculty Research Mentor: Richard Aidoo, Politics and Geography

Recidivism rates are high in most Western countries, and as prisons in these countries become overcrowded, the resources meant to enhance reintegration of inmates back into society can be inadequate or non-existent. Norway remains one of the countries with the lowest recidivism rates, around 20 percent. Along with other Scandinavian countries, Norway has a unique approach to its prison system. This paper discusses the exceptionalism associated with Norway's prison system, and explores the reasons behind its low recidivism rates, with a focus on the encouragement of reintegration of inmates back into society. With the educational opportunities and normalization techniques found in its open prisons, this country's prison system has rehabilitation at its core. Discussions in this research draw on open-ended survey responses from Norwegian respondents. The arguments connect opportunities created in the Norwegian prison system through education and normalization programs to the low recidivism rates found in Norway.

Economic Development in Africa (Oral Presentation)

Alioune Diagne (Economics)

Faculty Research Mentor: Robert Salvino, Finance and Economics

Rich in natural resources and minerals, Africa is one of the poorest continents in the world. Theories on poverty in Africa link causes to mismanagement and plundering of resources. We divide the views into two broad groups: "Externalists" and "Internalists". According to a Ghanaian economist George Ayittey, Africa's economy can be divided into three sectors. The modern sector is the elites of government where most of the problems occur. The informal sector consists of Africans with limited opportunities; most of them being unemployed or under paid. Lastly, the traditional sector consists of really prideful Africans they are very close-minded and like to stick to their roots and traditions. During the first phase of this literature review, I am conducting research on the theories and policy recommendations regarding a better economy in Africa.

Souls Without Solace - Bridging the Gap Between Perceptions and Reality (Oral Presentation)

Kerry Dittmeier (Public Health)

Faculty Research Mentor: Sharon Thompson, Health Sciences

According to the National Coalition for the Homeless, on any given night in the US there are over 750,000 people without a place to sleep. In 2014, 5,040 homeless adults and children were identified in South Carolina. Horry County is ranked first in the state for the highest population of unsheltered homeless individuals and second for the largest population of homeless. The purpose of this research project was to bridge the gap between community perceptions of people who are homeless and the reality of who these homeless individuals are. This was accomplished through a multifaceted comprehensive community research project. First, detailed interviews with persons who are homeless in Horry County were conducted using both quantitative and qualitative methods. Second, a survey was developed, Homelessness in Horry County, which was completed by community members to quantify perceptions of attitudes toward those who are homeless. Results will be discussed.

Effects of Group Connectedness on Campus Climate Among LGBTQ+ Individuals Involved in a Sorority or Fraternity (Poster Presentation)

Megan Evans (Psychology)

Faculty Research Mentor: Emalee Quickel, Psychology

A large body of research indicates that LGBTQ+ students' perceptions of a hostile and invalidating campus climate may negatively impact their academic development and their feeling of connectedness on campus (Sollito, Johnson, & Myers, 2013). Much of this existing literature, however, has focused exclusively on the campus climate in relation to student's wellbeing, and very little research has concentrated on involvement in extracurricular activities such as clubs, Greek organizations, sports, honor societies, and so on. Previous literature has also suggested that participation in Greek life throughout enrollment at a University creates a welcoming environment among students (Walker, Martin, & Hussey, 2014). However, very little research has been conducted examining campus connectedness among students who identify as LGBTQ+ and participate in University Greek life. The purpose of this study is to expand on existing research by examining the effects of campus climate on feelings of connectedness in students who identify as LGBTQ+ and belong to either a Fraternity or Sorority. Participation in Greek life among LGBTQ+ individuals may create a safe haven by increasing feelings of connectedness throughout their college community. Very little existing research has examined these factors in relation to individuals who identify as LGBTQ+.

Dry Weight Energy Density of Prey Fishes in the Nearshore Waters of the Upper Niagara River and Buffalo Harbor (Oral Presentation)

Emily Forzono (Marine Science)

Faculty Research Mentor: Derek Crane, Biology

Prey fishes play an integral role in fish communities by providing food for piscivorous fishes. The quantity and quality of prey available to piscivorous fishes can affect their growth, survival, and reproductive rates. Quality of prey can be assessed by examining energy density; however, there is a paucity of data on energy density of common nearshore prey fishes in the Upper Niagara River and Buffalo Harbor. To better understand the quality of available prey in nearshore areas of the Upper Niagara River and Buffalo Harbor we compared the energy densities of (1) native fishes and invasive fishes, (2) age-0 and yearling-and-older conspecific fishes, and (3) Buffalo Harbor and upper Niagara River conspecifics. Analysis of variance was used to identify differences in dry weight energy density among locations, age groups, and species. I will present results from these analyses and discuss potential implications for management of prey fishes and their habitats.

Mindfulness Based Stress Reduction Techniques Among College Students (Oral Presentation)

Taylor Genander (Psychology)

Faculty Research Mentor: Joan Piroch, Psychology

This research was designed to investigate stress and anxiety among college students as influenced by different mindfulness based stress reduction techniques (MBSR). The researcher utilized a between group design and subjects were students at Coastal Carolina University. Data were collected in a standard research lab. Participants assigned to experimental groups were either instructed to play with a Buddha board or Zen garden for ten minutes, or listen to a ten minute guided meditation recording. All participants assigned to the control group and three experimental groups completed the State Trait Anxiety Inventory (STAI), Perceived Stress Scale (PSS), and a demographic survey. Results of a one-way ANOVA were discussed relative to the hypotheses that MBSR techniques would decrease stress and anxiety, and that the meditation group would have higher stress and anxiety scores compared to the other experimental groups. Implications of this research were discussed.

The Relationship Between Assigned Homework and its Purposes (Poster Presentation)

Nelda Glaze (Elementary Education)

Faculty Research Mentor: Catherine Scott, Education

The daily activity of homework impacts the lives of students, parents, and teachers alike. There is a positive correlation between completing homework and student achievement for all grade levels, except for elementary students (DeNisco, 2013). Regardless, elementary teachers continue to send homework home with their students for a variety of reasons, including school requirements and beliefs that homework does help improve academic performance. Thus, this study addresses the question: What types of homework are teachers providing students, how often, and for what purpose? Surveys were sent to elementary school teachers at local schools to gather information on their views of homework. The survey included Likert scales, ranking, and multiple choice questions. The data collected suggested that the teachers had varying opinions on homework and its purpose, which impacted their students' assignments.

Traces of Extreme Flood in Oxbow Lake Deposits of the Pee Dee River (Poster Presentation)

Joanna Goley (Marine Science)

Faculty Research Mentor: Zhixiong Shen, Marine Science

Flooding of low land rivers not only affect human infrastructure, but also coastal and marine ecosystems through sediment, nutrient, and pollutant exporting. The South Carolina Lower Coastal Plain host many rivers that just experienced a 1000- year flood in 2015 that caused devastating damage. Flooding records from river gauging are too short to evaluate floods of this magnitude and frequency. Therefore, geological records of extreme floods are pursued. The focus of this study is to identify traces of extreme flood records from oxbow lake deposits along the Pee Dee River to explore their potential for paleo-flood study in South Carolina. Oxbow lakes generally only receive coarse sandy sediments during extreme flooding. I will present water content, loss-on-ignition, and grain-size data of sediments taken from Graves Lake along the Pee Dee River for flood-event identification and ²¹⁰Pb chronology to reconstruct history of extreme floods of the Pee Dee River.

Iceberg Scours in the Gulf of Maine (Poster Presentation)

Rebecca Green (Marine Science)

Faculty Research Mentor: Jenna Hill, Marine Science

The Gulf of Maine is located off the coast of Maine and Massachusetts on the U.S. Atlantic Coast. During the Last Glacial Maximum (~21 to 19 ka), the Laurentide ice sheet covered much of northern North America. As the ice sheet receded and sea level rose, numerous icebergs were likely discharged from the ice margin. These icebergs would have been entrained in meltwater currents and distributed across the Gulf. Many of the grooves observed on the banks around Wilkinson Basin were likely formed as the keels of drifting icebergs were dragged across the seafloor creating characteristic iceberg scour features. The overall azimuth of the scours implied southwest transport of scours across the Gulf of Maine. This orientation suggests the icebergs were sourced from the Bay of Fundy and formed between 16 and 14 ka as the Laurentide ice retreated from the Bay (Uchupi et al., 2008).

The inalienable Right to a Peaceful Death (Oral Presentation)

Rachel Hansen (Communication)

Faculty Research Mentor: Amanda Grefski, English

Few issues are more diverse, or personal than ending a life with a doctor's consent and prescription. The Death with Dignity Act was first passed in Oregon in 1997. It highlights how citizen should have the right to end their lives, with a physician's assistance, to forgo suffering during a terminal illness or condition. To protect physicians and patients, there are rules set in place that must be followed before a doctor will assist a terminally ill patient. The patient must be 18 years or older, defined as capable by an acting physician, provide two verbal requests and one written request, and lastly the prescribing and consulting physician must confirm the diagnosis and prognosis. All American citizens should be able to choose when to end their suffering during a terminal illness as part of their end-of-life palliative care. It's a rational and humane choice that should be an inalienable right.

Biological Parameters and Management Strategies Used to Establish Successful Marine Protected Areas (Poster Presentation)

Michaela Harrington (Marine Science)

Faculty Research Mentor: George Boneillo, Marine Science

Marine Protected Areas (MPAs) are a relatively new way to conserve the ocean's resources and protect ecologically sensitive areas and populations that are in danger of becoming destroyed or extinct. The purpose of this study was to examine successful MPAs and provide a strategy to manage them. Parameters examined larval recruitment, zoning, member participation, and funding. Areas with more sedentary fish and fewer mobile species are recommended to limit spillover. If overfishing occurs due to high rates of spillover the MPA should increase its size. Maps should be made to determine if the area recruits and retain

enough larvae. MPAs should be set up near spawning sites to recruit larvae. Breaking MPAs into zones for research, recreation, and commercial purposes has been successful in conserving the area. The stakeholders need to attend public meetings and be a part of decisions. Funds can be obtained through grants, fees, fundraisers and businesses.

Inattentive and Change Blindness in ADHD (Poster Presentation)

Alecia Hostettler (Psychology)

Faculty Research Mentors: Terry Pettijohn, Psychology and Fang-Ju Lin, Biology

The aim of the present study is to examine the effect of varying levels of ADHD symptomology on inattentive and change blindness tasks. University participants will be asked to complete a self-report ADHD screening scale and assessed for their performance on the popular Monkey Business Illusion (IB) test as well as a novel change blindness (CB) task. In addition to basic demographic information, participants will be asked to report if they have a past or current ADHD diagnosis and if they are prescribed stimulant medication (e.g. Adderall, Ritalin) at the time of the study. It is expected that participants with high ADHD symptomology will outperform low-ADHD control participants in the inattentive blindness task. Participants with low-ADHD are expected to perform better on the change blindness task relative to high-ADHD participants. Data will be collected during the spring 2016 semester in individual lab sessions.

Communication and Citizen Participation in Southern Local Politics: A Disconnect Between Municipalities and Constituents (Oral Presentation)

Rachael Houston (Political Science)

Faculty Research Mentor: Adam Chamberlain, Politics and Geography

Despite the fact that 96 percent of all political contests in the United States are for local offices, citizens are far more likely to participate in national elections and forgo exercising their voice in local politics. Local-level democracy has often been neglected. This neglect may be because of a lack of interaction between constituencies and city mayors and managers. Without effective communication between both groups, citizens are unaware of opportunities to influence policy change in their communities. By analyzing survey data from 219 local municipalities in the South, this study focuses on understanding Southern city mayors' and managers' views on local media reporting about government and citizen interest in local politics. This study finds that a majority of Southern city mayors and managers do not put emphasis on increasing citizen engagement in their cities and do not see a connection between the media and citizen activeness.

Discrimination in the Era of Preventative Medicine: An Examination of Physician Bias in Recommendations for Cancer Genetic Testing (Oral Presentation)

Erin Huggins (Biology)

Faculty Research Mentor: Lisa Winters, Sociology

A large body of research indicates that racial inequities in cancer incidence and mortality are prevalent in the United States. Much of this literature has focused on the barriers between patients and cancer screening and/or treatment; namely, a lack of physician recommendation. However, the role of physician recommendation has been understated in hereditary cancer prevention through genetic testing. The purpose of this study is to expand on existing research by determining the equity with which physician recommendations are given to patients for whom genetic testing is appropriate (as outlined by The American Society of Clinical Oncology). More specifically, this research uses data from the Integrated Health Interview Series (IHIS) to examine the role of racial and socioeconomic bias among physicians, and its impact on the likelihood that at-risk patients receive recommendations for genetic testing for mutations associated with certain cancers.

The Impostor Phenomenon and Racial Identity (Oral Presentation)

LaVasia Jackson (History)

Faculty Research Mentor: Maggi Morehouse, History

Often times many people have feelings of inadequacy and incompetence although they are externally successful in life, this is known as the Impostor Phenomenon. Impostorism is associated with great psychological distress and lower self-esteem in African American students, which in turn promotes a "fake it until you make it" mentality about goals and accomplishments. This study correlates the Impostor Phenomenon and racial identity among African American students at a predominately white institution. The findings of my research may be useful to African American students who desire to be more of their authentic selves in all environments and walks of life.

Stratigraphy and Geochronology of the Pleistocene Paleo-strand Plain in the Coast of Northeastern South Carolina (Poster Presentation)

Jonathan Jones (Marine Science)

Faculty Research Mentors: Zhixiong Shen, Marine Science and Eric Wright, Marine Science

Chronology of late Quaternary deposits in the US Atlantic coastal plain has been a subject of controversy. This study investigates the stratigraphy and chronology of Pleistocene beach ridges. Located near Georgetown, SC, stratigraphy of the beach ridges was determined using vibracoring and ground penetrating radar. Subsamples were analyzed for optical stimulated luminescence (OSL) dating to determine age of deposition. The shallow stratigraphy in this study area consists of a top unit of well to moderately sorted fine-medium sands. The next unit is poorly sorted medium-coarse sands with interbedded gravel layers that transits downwards to a third unit of shelly sand with common well-rounded shell fragments. The lower two units together form foreshore deposits. OSL results will be gathered from the University of Liverpool and be compared with other studies to help understand the chronological development of the beach ridges.

Evaluation of Sand Grain Variability and Biogeochemical Activity in Coral Reef Sediment (Poster Presentation)

Sarah Keffer (Marine Science)

Faculty Research Mentor: Angelos Hannides, Marine Science

Approximately 44% of the Earth's continental shelves and reef systems are covered by highly permeable coarse-grained unconsolidated sands. High permeability and physical transport generate strong matter exchange between the water column and the seafloor, which causes sands to be a site of significant biogeochemical activity. The well-studied reef sands of Oahu, Hawaii are composed of ~90% biogenic carbonate sediment produced from the surrounding reef communities, including coral, foraminifera, molluscs, and crustose coralline algae. In this study, we explore sand grains from diverse settings in Southeast Oahu to highlight the large variability in key reef sand grain characteristics such as appearance, surface relief, shape, mineral composition, and origin. We then examine possible relationships between this sand-grain-level variability and variations in geophysical and biogeochemical characteristics in reef sands. The results of this study will highlight the role of sands as components of coral reef ecosystems and the global shallow ocean.

Adding Value to Regional Transit Systems in a Seasonal Tourist Destination (Oral Presentation)

Nicole Kuhn (Economics) Samuel Tracy, Alioune Diagne and Rashad Baker

Faculty Research Mentor: Robert Salvino, Finance and Economics

Public transportation systems in highly populated areas differ from areas in which the economy revolves around seasonal tourism; therefore, a business model that accounts for seasonality is necessary. By forecasting potential funding and researching essential operational modifications for these seasonal areas, we will understand how to add value and accommodate demand in these economies. To do so, we will look at the Coast Regional Transit System, located in the Horry-Georgetown counties in South Carolina as an example. Additionally, we aim to provide evidence that this project can be seen as an investment rather than a large expenditure to the city. In order to do this we must gather information for how many people and who will benefit from this, as well as what are plausible returns on this investment.

Development of a [2]-Catenane Synthetic Method and a Student Beliefs Survey for a Hybrid Organometallics Course (Oral Presentation)

Jourdan Lakes (Marine Science)

Faculty Research Mentor: Kevin McWilliams, Chemistry and Physics

The synthesis of complex macromolecules has been of interest to the chemical community in recent decades due to a number of factors: 1) standardized synthetic procedures, 2) increased interest in synthetic biochemical analogues, 3) use in emerging fields, like nanorobotics, and 4) easier identification via modern instrumentation. Based on these factors and the Department of Chemistry's need for new upper-level electives, an upper-level organometallic course has been developed that focuses on the synthesis of a simple [2]-catenane (two mechanically interlocked rings), using a macrocycle and diyne linker. The synthesis of the macrocycle and diyne linker were carried out and these reactions were refined when necessary. Additionally, the course was set up as a hybrid lecture/lab course (2/2) with an 'intro to graduate school' basis. A survey was developed to compare and contrast the efficacy of this approach relative to other upper-level chemistry courses.

Sleep and Stress among Undergraduates: Are there Differences by Gender, Age, or Race? (Poster Presentation)

Victoria Lambert (Public Health)

Faculty Research Mentor: Sharon Thompson, Health Sciences

Sleep and stress impact college student health and, potentially, academic success. This study examined college students' sleep and stress scores by age, gender, and race. Participants included 318 students (Mean age = 20.52 years, 64.52% female, 72.24% White; 27.76% African American). Females had higher stress scores ($M = 20.18$, $p = .0006$) than males ($M = 17.71$). Stress scores

decreased 40% for each unit increase in age ($p = .0014$). African Americans reported more sleep problems ($M = 6.57$, $p < .0001$) than Whites ($M = 3.65$). For all participants, Stress Scores were positively correlated with Sleep Scores ($.17$, $p = .0031$) and negatively correlated with age ($-.17$, $p = .0033$). These findings are helpful for planning sleep and stress interventions on college campuses.

Obstructive Sleep Apnea: Testing the Accuracy of the SLEEPMED Questionnaire (Oral Presentation)

Briana Laws (Biochemistry)

Faculty Research Mentor: Sharon Thompson, Health Sciences

Obstructive Sleep Apnea (OSA) is a common sleep disorder in which an individual completely stops breathing, or experiences impaired breathing due to an obstruction of the airway. Out of more than 40 million Americans suffering from OSA, only 10% have been properly diagnosed, and even fewer have been successfully treated. Screening protocols, such as written questionnaires, are a common method for predicting if an individual is at risk of OSA. In-Lab (PSG), or Home Sleep Studies (HST) are testing methods used to diagnose the presence and severity of OSA in a given patient. In this study, the risk of OSA determined by the SLEEPMED (Previously Watermark) questionnaire was compared to the OSA severity determined by the Home Sleep Test. The results from 30 patients were analyzed to test the accuracy of the SLEEPMED Questionnaire. Results will be discussed.

Impact of Stage of Change and Gender on Motivation to Participate in Recreational Activity and Perceptions of Health (Poster Presentation)

Briana Laws (Biochemistry)

Faculty Research Mentor: Sharon Thompson, Health Sciences

Regular recreational activity has numerous mental, physical, and social health benefits. To examine motivations to engage in recreational activity and perceptions of health by gender and Stage of Change (SOC), an online survey was developed and administered. Using General Linear Model Analysis of Variance (GLM), motivation to participate in recreational activity and perceptions of health (dependent variables) were examined by independent variables of gender and SOC (covariate). Participants included 735 adults (58.23% female). Females were more likely than males to use recreational activity to improve physical health and fitness (Female: $M=1.31$, Male: 1.42 , $p < .05$) and to insure mental health and well-being (Female: $M = 1.42$, Male: $M = 1.61$, $p < .001$). These items were significant by SOC with responses decreasing (more likely to agree) by 15.7% ($p < .001$) and 13.15% ($p < .0001$), respectively, for each unit increase in SOC. Other results will also be discussed.

Physical Factors Connected to Hypoxia in Long Bay (Oral Presentation)

Maryland Lewis (Marine Science)

Faculty Research Mentors: Diane Fribance, Marine Science and Louis Keiner, Chemistry and Physics

The Long Bay area has experienced seasonal hypoxia events in the late summer months since 2004. Although the effects of hypoxic waters are well studied, the combination of physical, biological, and chemical factors leading to these events may vary based on location. Long Bay is an area of interest because it is an open basin along a coastline with a shallow, broad shelf, unlike other known regions which experience chronic seasonal hypoxia. We have analyzed physical factors leading up to recent hypoxic events to best determine the precursors and key features that determine the extent, duration, or source of these events. Satellite imagery is used to gather spatial and temporal information about chlorophyll levels, and sea surface temperature during the time periods of interest. Additionally, in-situ wind and water quality data are used to find markers that indicate the extent, duration, and/or cause of these events.

Effectiveness of Social Skills Instruction in Young Students with Developmental Delays (Oral Presentation)

Teresa Lickfeld (Special Education/Learning Disabilities)

Faculty Research Mentor: John Delpont, Special Education/PE/Middle

Effective social skills and communication skills during early childhood years are important indicators of academic and social success for the rest of a child's life. Development of these skills does not always occur naturally in children with developmental delays. The current study evaluated the effects of direct social skills instruction and peer-mediated instruction in improving the social skills of preschoolers with developmental delays. Three children, including one peer, enrolled in a special education classroom were evaluated as participants in this study to determine if the social skill of appropriately gaining someone's attention increased through intervention as well as if the skill was generalized to other areas and maintained after the intervention ended.

The Acute Effect of Different Foam Rolling Speeds on Iliotibial Band Flexibility (Oral Presentation)

Rachel Liming (Exercise and Sport Science)

Faculty Research Mentor: Jason Smith, Kinesiology

Foam rolling over 60 seconds increases range of motion (ROM). Current literature on the ideal foam rolling rate is nonexistent. Therefore, this study's purpose is to determine if the rate of foam rolling will affect iliotibial band ROM. Participants will complete a control, slow foam rolling rate, and fast foam rolling rate sessions in a randomized order. After a warm-up, participants will have iliotibial band flexibility assessed using the Ober test. Then, participants will complete 90 seconds of rest, foam rolling at a slow rate, or foam rolling at a fast rate before running on a treadmill for three minutes. While running the participants will be filmed in the frontal plane to assess hip range of motion. Following the treadmill run, the Ober test will be performed again. Results identifying any differences in ROM will be discussed.

Energy Expenditure of Golfing: An Alternative Form of Physical Activity? (Poster Presentation)

Danielle Ludlam (Exercise and Sport Science)

Faculty Research Mentor: G. William Lyerly, Exercise and Sport Science

ACSM highlights a sedentary lifestyle as a risk factor for developing cardiovascular disease. The 2008 PA guidelines (PAG) suggests that a 75 kg person expend 712.5 kcals per week at 50% HR_{max} intensity to elicit health benefits. The purpose was to determine if golfing, walking (W) vs. riding (R), impacts health by observing energy expenditure (EE) per kilogram of body weight (kcal/kgbw). Thirty-nine participants completed 9 holes of golf, 18 W and 21 R. EE was increased by 3.38 kcal/kgbw in W (7.09 kcal/kgbw±0.35649) compared to R (3.71 kcal/kgbw±0.35649) (p=0.000). Total EE was increased by 298.22 kcal in W (625.55 kcal) vs. R (327.33 kcal). The data suggests that an individual could potentially meet the PA requirements for a week by golfing 9 holes while W twice a week (1251.1 kcal) or R three times a week (981.99 kcals). Our data suggests that golf may be a viable PA option.

Bottlenose Dolphin (*Tursiops truncatus*) Association Patterns Examined off the Coast of North and South Carolina (Oral Presentation)

Kyle Massie (Marine Science)

Faculty Research Mentor: Rob Young, Marine Science

The National Marine Fisheries Service currently identifies four stocks of bottlenose dolphins that overlap in the waters of South Carolina. Surveys in this area and neighboring waters in North Carolina from 2013-2015 have identified members of both estuarine stocks and the Southern Migratory Coastal Stock (SMCS), but the SC/GA Coastal Stock remains elusive. By calculating and comparing an index of association between individuals within and between adjacent survey areas, we hope to gain insights into the composition and seasonality of the four stocks. This study builds on a previous effort to examine associations for dolphins sighted near Murrells Inlet, SC, but expands the survey area to include near-coastal waters from North Inlet, SC to Cape Lookout, NC, and estuarine waters from Little River, SC, to inland waters near Beaufort, NC. I will analyze and report on spatio-temporal differences between associated dolphins and on potential stock determination.

Social Media's Effect on College Enrollment and Student Decisions (Oral Presentation)

Molly McAllister (Marketing)

Faculty Research Mentor: Monica Fine, Marketing

In the past several years, the importance of social media in daily life has skyrocketed. As a result, high school students have more information about prospective colleges and universities than ever before. Youth not only have the opportunity to directly "follow" a university's own social media accounts, but can reach current students via social media. This allows for students to view information that is not released by the university and can therefore give a more authentic and open review of the school and its characteristics. The purpose of this study is to determine if a high school student's social media interaction with a university is correlated to them attending a specific university. Students gather a perception of the school through social media often without having been to campus. This research will also examine those perceptions and whether they influence a student's decision to attend.

Organic and Metal Sediment Contamination in Winyah Bay, SC (Poster Presentation)

Amy Moody (Marine Science)

Faculty Research Mentor: George Boneillo, Marine Science

Winyah Bay, a partially mixed estuary in South Carolina, has industry, agriculture, and residential properties along it. Contaminants that come from these sources could get trapped into the sediments and be detrimental to benthic organisms. The focus of this study was to determine the concentrations of total organic carbon (TOC), copper, cadmium, zinc, and lead in Winyah Bay sediments. A transect was performed in Winyah Bay to examine how sediment contamination changed throughout the estuary. Current metal concentrations were compared to historical values. The levels of metals in the estuary were low

enough to not cause harm to the benthos, but levels of organic matter were high enough to cause harm. Contamination in the sediments was affected by grain size and proximity of contamination sources. Metal levels in Winyah Bay declined over the past 30 years, indicating that the benthos is most likely healthier.

Ontogenetic Timing of Sexual Dimorphism in Juvenile Boa Constrictors (Oral Presentation)

Kaela Moon (Biology and Spanish)

Faculty Research Mentor: Scott Parker, Biology

Many species of animals display sexual size dimorphism where males and females attain different body size at maturity. The ontogenetic timing, as well as the underlying physiological mechanisms responsible for divergence in growth trajectories between sexes, is poorly understood. In red-tailed boas (*Boa constrictor*), females attain body masses more than twice that of males. I measured growth rate and changes in head morphology of 12 juvenile Boa constrictors to determine if variation in growth rate associated with sexual size dimorphism is detectable at early ontogenetic stages. I measured oxygen consumption at 25, 28, and 31 °C to determine if energetics of growth differ between sexes during ontogeny. This study is the first to examine the ontogenetic timing of divergence in growth between sexes and associated changes in energy consumption in the Boa constrictor.

Gender Differences in Antisocial Personality Traits and Behavior (Poster Presentation)

Kaitlin Morehead (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

Existing research on antisocial personality characteristics and aggressive behaviors has focused largely on males. Thus, in the current study researchers examined gender differences in antisocial personality characteristics and behaviors. Based on self-reports from 166 college student participants, young men reported significantly higher levels of callous affect and interpersonal manipulation than young women. Additionally, young men reported less fear and sadness than young women. No gender differences were found in the various aggressive behaviors that were reported (e.g., malicious humor, electronic aggression, and social exclusion). Data continues to be collected with the hope of also examining gender differences in prosocial behaviors.

Emergence and Transport of Sediment-Dwelling Organisms over an Intertidal Oyster Reef (Poster Presentation)

Coral Mullen (Marine Science)

Faculty Research Mentor: Keith Walters, Marine Science

Studies within intertidal saltmarsh systems suggest sediment-dwelling organisms only are advected hydrodynamically into the water column, but benthos is known to swim into the water column in other marine habitats. To test whether benthic organisms within intertidal saltmarshes exhibited active vertical emergence, a study was conducted at Waties Island, SC. Vertical emergence and horizontal transport traps were positioned during low tide on and around an intertidal oyster reef, collected on the next low tide, and all organisms collected identified to the lowest possible taxon. Although less than in other systems, emergence was approximately equal between reef and mudflat habitats with 43.6% of all fauna emerging from the reef. Horizontal traps contained the same species as vertical traps but in greater numbers indicating possible accumulation by currents. Benthic emergence likely contributes significantly to the population and community dynamics of intertidal saltmarsh environments.

Vertical Distribution of Demersal Fish larvae in North Inlet Estuary, SC (Oral Presentation)

Rayne Newswanger (Marine Science)

Faculty Research Mentor: Juliana Harding, Marine Science

Gobies and combtooth blennies are common demersal fish species inhabiting United States east coast, salt marsh tidal creeks. Goby and blenny larvae co-occur seasonally in North Inlet estuary, South Carolina. The vertical distribution of goby and blenny larvae were studied at Clambank Creek in North Inlet from May to August 2015. Surface and bottom plankton samples were collected weekly during mid-ebb or mid-flood tides. The larvae were separated by species and developmental stage, counted, and measured (standard length in mm). Early stage goby and blenny larvae were common in the surface, while older larvae were more common at the bottom. Water column separation of species and life history stages could minimize competition and be beneficial to the success of both fish groups' early developmental stages.

Consumerism in the City: The Ways in Which Fashion is Both Limiting and Empowering in *Sex and the City* (Oral Presentation)

Taylor O'Hara (English)

Faculty Research Mentor: Cynthia Port, English

HBO's series *Sex and the City* has received both praise and condemnation for its portrayal of successful, single females living in New York. The series is constituted of various themes such as friendship, sex, love, and different interpretations of identity and femininity. However, one of the most substantial themes in the show that has arguably received the most criticism is the motif

of fashion and consumerism. Through the analysis of fashion and media theory along with close readings of the show, this paper will exemplify how the theme of consumerism in *Sex and the City* can be depicted as both inhibiting and empowering.

The JOVE Initiative (Oral Presentation)

Willie Park (Applied Physics)

Faculty Research Mentor: Louis Rubbo, Chemistry and Physics

Initiating an educational extension program from NASA called JOVE. A radio telescope system that allow for observation and the ability to analyze natural radio emissions from Jupiter, Sun, and our galaxy. Better referred to as radio astronomy. The radio telescope and 10ft x 32ft antenna operates at 20 Mhz. The analyzing set up uses a software package that allows us to record and graph representations of these solar radio emissions, such as Radio-Skypipe that allows for data sharing for comparable observations geographically. Jove will also offer hands on training for astronomy students to effectively set up and use the radio telescope system as field equipment to gather data through the process of the Scientific Method to better understand our solar system.

Ocean Surface Effects on Refractivity Inversions Using Genetic Algorithms (Poster Presentation)

Stephen Penton (Computer Science and Applied Mathematics)

Faculty Research Mentor: Erin Hackett, Marine Science

Predicting the instantaneous performance of radar systems is challenging because detailed information about the distribution of the atmosphere's index of refraction (refractivity) is needed. Refractivity causes radar waves to bend as they propagate through the atmosphere, which impacts the predictability of a system's performance. These challenges have led to the use of inversion methods to determine atmospheric refractivity using propagation models and radar measurements. Inversion methods attempt to generate model inputs from observed data. In this study, genetic algorithms (GA) are used for inversion to obtain parameters for a simplified refractivity model. Accuracy of the inversions are evaluated by comparing inverse and known solutions through the use of synthetic radar measurements. We compare the accuracy of inversions over a smooth sea surface to inversions over a more realistic wavy sea surface, highlighting the impact of a realistic sea surface on the GA's ability to converge on a unique stable solution.

Wavelets and Image Noise Reduction (Oral Presentation)

Maria Peters (Applied Mathematics and Computer Science)

Faculty Research Mentor: Menassie Ephrem, Mathematics and Statistics

Although relatively new, wavelets quickly gained popularity. Signal processing is one of their most common applications. Our project focused on image processing and, in particular, on the removal of the random noise from the digital images. We explored Haar and Daub4 wavelets for this purpose. These functions decompose a signal into shorter frequencies allowing us to detect the noise. Although wavelets can be very efficient in signal denoising, some details of an image are lost once it's been processed. We attempted to minimize the loss of this information while reducing the unwanted noise.

Exposing *Artemia salina* to *Chattonella subsalsa*, a Toxicity Test (Oral Presentation)

Nicholas Picha (Marine Science)

Faculty Research Mentors: Eric Koepfler, Marine Science and Amy Grogan, Marine Science

The raphidophyte algae, *Chattonella subsalsa*, has been reported to cause harmful algal blooms in every major ocean. In South Carolina, *C. subsalsa* blooms frequently cause fish kills in estuarine waters neighboring urbanized areas, however the fish kill mechanism of *C. subsalsa* is currently unknown. Lethality of *C. subsalsa* cells may correspond with their growth stage which progresses through five distinct phases; lag, early exponential, late exponential, stationary, and decline. In nature, many harmful algal blooms occur in the late exponential or stationary growth phases. To examine lethality of *C. subsalsa* at various growth phases, the zooplankton species *Artemia salina*, was exposed to *C. subsalsa* culture at two day intervals for twenty days. Deaths fluctuated but highest mortalities were observed in the late exponential and stationary phases. These growth phases were also found to have significantly greater percent mortalities than both the lag phase and control groups (Kruskal-Wallis rank sum test, $p=0.05$).

Characterization of an Essential Chloroplast Protein (Oral Presentation)

Christopher L. Pierpont (Biology and Marine Science)

Faculty Research Mentor: Michelle M. Barthelet, Biology

During the synthesis of proteins within a cell, DNA is first transcribed into RNA, and RNA is then translated into protein. Before translation occurs, the RNA transcript is modified by the removal of introns, which are regions of extra sequence not needed for formation of the final functional protein. Maturases are enzymes within cells which are involved in the removal of introns from RNA. Maturase K, or MatK, is proposed to be the only chloroplast-encoded maturase of land plants. MatK is thought to be an

essential protein for chloroplast/plant function. Recent studies have demonstrated that this maturase associates with up to seven introns within the chloroplast. A protein assay for demonstration of maturase activity has not yet been developed for MatK. Developing a splicing assay would help characterize MatK function at the molecular level, as well as aid in determining associated factors required for splicing activity in the chloroplast.

When Love Is Not Mutual: The Experience of Rejectees and Rejecters (Oral Presentation)

Kaitlyn Powalie and Abby Boytos (Psychology)

Faculty Research Mentor: JongHan Kim, Psychology

Thinking of love makes us smile and excited. What happens if the love is not mutual? The present study tested the experience of unrequited love. One hundred thirty-four Coastal Carolina students were randomly assigned to write either their experience as a rejectee or a rejector. After writing their experience, they answered questions on unpleasantness, disappointment, self-esteem, confidence, and the likelihood of this experience occurring. The results showed that this experience was unpleasant to both rejectees and rejectors. The rejectees were more disappointed than the rejectors. The self-esteem and confidence of the rejectees were significantly lower than the ones of the rejectors. These differences came from the decrease of self-esteem and confidence of the rejectees, rather than the increase of self-esteem and confidence of the rejectors. Rejectees rated this experience as more likely to happen to others. The ways to overcome this experience are discussed.

Investigating Phage Activity in Coastal Carolina University Students (Poster Presentation)

Amy Powers (Biochemistry)

Faculty Research Mentor: Paul Richardson, Chemistry and Physics

There is a growing medical concern regarding bacterial resistance to antibiotics. Therefore, the quest to find an alternative treatment for bacterial infections through the use of bacteriophages was undertaken. A bacteriophage (phage) is a virus that solely infects bacteria, and they are commonly found behind the ear and inside the nostrils. Coastal Carolina University students volunteered to be swabbed in these locations in attempts to sequester phages for additional study. The samples were filtered and plating techniques were performed to identify the potential presence of phages; capable of lysing *Escherichia coli* (*E. coli*) or *Staphylococcus aureus* (*S. aureus*). Once found, the phages were confirmed and classified using polymerase chain reaction (PCR) and gel electrophoresis.

Short-term Memory Deficits: Study Using Fruit Fly *Drosophila* Alzheimer's Disease Model (Poster Presentation)

Eric Robles (Biology)

Faculty Research Mentor: Fang-Ju Lin, Biology

Human Alzheimer's disease (ALD) is the most prevalent and lethal neurodegenerative disease; it involves the presence of extracellular amyloid plaques, particularly Amyloid beta-42 (AB-42). Male *Drosophila* ALD flies (experimental) and elav-GAL4 flies (as parental control without AB-42) were tested for learning and short-term memory using the courtship suppression assay (Siegal and Hall, 1979). Male elav-GAL4 and ALD flies exhibited less courtship behaviors towards mated females, indicating learning during training. The trained elav-GAL4 flies had lower average testing courtship index (CI) than sham control, indicating intact short-term memory. Average testing CI for trained ALD males was higher compared to the sham control group. Our results showed that five-day old ALD males already exhibited deficits in short-term memory. Further research into amyloid plaques and short-term memory is necessary to better understand the pathogenesis of several neurodegenerative diseases prevalent in today's society.

Collective Prey Capture by Juvenile Venus Flytraps (*Dionaea muscipula*) (Poster Presentation)

Steven Rosen (Biology)

Faculty Research Mentor: John Hutchens, Biology

The Venus flytrap (*Dionaea muscipula*), first described by Charles Darwin, is a unique carnivorous plant which acquires prey using leaf blades modified into snap-traps. A recent study showed that prey capture by flytraps was not selective. With this study we examined prey capture rates further by analyzing *D. muscipula* traps less than 1 cm in length to determine if juvenile flytraps differ from adults. Similar to the earlier findings, trap size appeared to play no role in prey capture success. This was likely due to the fact that 88% of all prey items recovered were smaller than the smallest collected trap, suggesting that lack of selection by traps could be due to limited prey type availability. Future research is needed to determine if flytraps in areas with greater variation in prey type instead favor selection.

Synthesis of the Tricyclic Core of Flinderole C from o-Iodoaniline (Poster Presentation)

Samantha Stady (Marine Science)

Faculty Research Mentor: Bryan Wakefield, Chemistry and Physics

Flinderole C is a natural product from the bark of the *F. ambionensis* plant found in Papua, New Guinea. This compound is known inhibit to growth of a parasite, *P. falciparum*, which causes malaria in humans. In this research project, a more efficient method to synthesize the core of flinderole C is being studied. The goal is to avoid problematic steps and to get a greater yield of the product compared to earlier syntheses. Our main objective is to get to an alcohol intermediate from o-iodoaniline. This will be accomplished by converting o-iodoaniline into an indole through successive alkylations and subsequent Heck cyclization.

Comparison of Aroma Profiles Between Gluten-free and Gluten-containing Beers Using SPME in Combination with GCMS (Poster Presentation)

Nehemiah Stafford (Chemistry)

Faculty Research Mentor: Drew Budner, Chemistry and Physics

Alongside individuals suffering from coeliac disease, the public has grown increasingly aware of the potential health effects of diets high in gluten. There are a variety of foodstuffs deemed gluten-free, including beer. Beer produced from gluten-free grains has a distinct flavor that differs greatly from beer produced from gluten-containing grains, yet chemical differences between beers made from these two different grain sources have not been fully studied. It is the goal of this project to investigate the chemical differences within the aroma profiles of beer made from a grain source containing gluten – barley; and a grain source containing no gluten – sorghum. The aroma profiles were investigated while fermentation occurred and as the beer aged. The aroma profiles were sampled using SPME, then separated, identified and quantified using GCMS. Distinct differences in the chemical profiles were identified in terms of quantity and the variety of the compounds present.

Pharmacological Analysis of ROS-mediated Neurodegeneration in *C. elegans* (Poster Presentation)

Meghan Stickle (Biochemistry)

Faculty Research Mentor: Daniel Williams, Biology

The hallmark of many neurodegenerative diseases is the progressive loss of neuronal structure and ultimately neuronal death. Despite the substantial impact on human health, our understanding of the cellular and molecular mechanisms of neurodegeneration is poorly understood. Reactive oxygen species (ROS) can cause cellular damage and have been implicated in many neurodegenerative disorders. Our lab studies ROS-mediated neurodegeneration using activation of KillerRed in specific neurons of the model organism *C. elegans*. We are complementing genetic analysis in the worm through pharmacological perturbation to study the role of Ca²⁺ in ROS-mediated neurodegeneration. These results contribute to understanding the significance of Ca²⁺ in neurodegeneration pathways.

Counterterrorism or Vigilantism? The Cyber War Between ISIS and Anonymous (Oral Presentation)

Amy Thomas (Intelligence and National Security Studies) and Rachel Drummond

Faculty Research Mentor: Joseph Fitsanakis, Politics and Geography

On November 15, 2015, the cyber hacking group Anonymous declared war on the Islamic State of Iraq and Syria (ISIS). In response, ISIS warned that they “will respond to the threat” and published advice on how to counteract hacking attacks by Anonymous. This paper will examine the Anonymous-ISIS war under the prism of two disciplines, Counterterrorism and Information Assurance. It will argue that, regardless of its outcome, the cyber war between Anonymous and ISIS is detrimental to United States interests and international law. This confrontation between two non-state actors with a history of criminal activity is unlikely to follow conventional counterterrorism guidelines.

Associations between Personality and Faith with Psychosocial and Academic Adjustment (Poster Presentation)

Megan Townsend (Psychology)

Faculty Research Mentor: Andrew Terranova, Psychology

College is a very transitory time in a person’s life. Although it can be exciting, it can also be extremely stressful, and many times students seek to relieve this stress in maladaptive ways. Thus in the current study I examined how personality and faith relate to psychosocial and academic adjustment. Based on self-reports, preliminary findings indicated that participants who did not identify with a religion, used substances more frequently and had poorer psychological health than those who did identify with a religion. Interestingly, spirituality negatively correlated with study habits, additional data are currently being collected, with the hope that these findings can guide prevention and intervention efforts to help college students better adjust to this life transition.

Decreased Mixing Conditions during Low Oxygen Events in Long Bay, South Carolina: 2006-2014

(Oral Presentation)

Megan Troup (Marine Science)

Faculty Research Mentors: Erin Hackett, Diane Fribrance and Roia Gurka, School of Coastal and Marine Science Systems

Hypoxia (i.e., low dissolved oxygen in water) is a global phenomenon caused by both natural and anthropogenic factors that can lead to adverse effects on an environment's biodiversity. Low dissolved oxygen has been observed in Long Bay, SC, since 2004. Water quality and atmospheric data have been collected from both nearshore and offshore sensors in Long Bay over periods ranging from 1-8 years depending on the sensor. In this study, low oxygen conditions are categorized as events based on dissolved oxygen thresholds and timing criteria. Relationships between the dissolved oxygen and physical environmental conditions in the bay are examined primarily using correlation functions. Though we find variability in relationships between physical conditions and dissolved oxygen, increased vertical temperature gradients and low wind speeds show significant statistical relationships with low oxygen events. These results suggest that low mixing conditions frequently co-occur with low dissolved oxygen in Long Bay

Effect of Taurine on Human Huntington's Disease using Fruit fly *Drosophila* Model (Poster Presentation)

Amy Ward (Biology)

Faculty Research Mentor: Fang-Ju Lin, Biology and Tianyi Wu, Biology

The onset of human Huntington's disease generally starts between the ages of 30 and 40, and patients with Huntington's often do not live past the age of 50. The excessive CAG repeats (> 35 repeats) in human huntingtin proteins cause aggregates and eventual cell death. In this study, we expressed mutated (128 CAG repeats) human huntingtin in the neurons of fruit flies using a yeast Gal4-UAS system. We found that expression of mutated protein resulted in aggregates in the brains of mutated flies. In addition, there was a rapid decline of locomotor activity (negative geotaxis) in 128Q after two weeks of life. Recently, Bousquet et al. (2010) showed that cystamine and its derivatives, hypotaurine and taurine, offered neuroprotection in mouse model. We are currently testing the effect of dietary supplement of taurine in Huntington flies, by their lifespan, negative geotaxis, and immunostaining of protein aggregates.

Treatment Effects on ²²⁴Ra Production during Laboratory Sediment Equilibrationsm (Poster Presentation)

Philip Weber (Marine Science)

Faculty Research Mentor: Richard Peterson, Marine Science

Concern regarding hydrocarbon discharge into the marine environment has prompted greater demand for tools to understand the impact of carbon-compound release into these systems. Researchers struggle to quantify the magnitude of hundreds of natural hydrocarbon seeps in the Gulf of Mexico compared to blowouts such as the Deepwater Horizon. Faculty and graduate students in the School of Coastal and Marine Systems Science are developing new methods for quantifying natural discharge using ²²⁴Ra, a conservative radiotracer. Poorwater tracer signals measured at sea are compared to those derived in the laboratory to determine fluid exchange rates across the sediment-water interface. Here, I examine the theory of radioactive in-growth and the effectiveness of their experimental design by evaluating the role of water volume, incubation duration, and sediment mass and storage conditions through a series of laboratory equilibrations. My results indicate minor limitations in assumptions behind their methods that require adjustments in the approach.

Providing America with Live Sex Dolls: Human Trafficking (Oral Presentation)

Steven Webster (Elementary Education)

Faculty Research Mentor: Linda Martin

Human trafficking can be broken up into multiple subsections. However, this session is only going to focus on the sex trafficking aspect of things. It will have interviews, an overview of the laws against it, and some interviews. It can be a very sensitive topic, but it's a topic that needs a little more light shed onto it, because most Americans do not realize it is happening on home soil. This paper will also propose a few solutions to this problem and how to help relieve the guilt and pain from the victims.

The Acute Effects of 30- and 90-seconds of Static Stretching on Vertical Jump Performance (Poster Presentation)

Courtney Weeks (Exercise and Sport Science)

Faculty Research Mentor: Jason Smith, Kinesiology

The purpose of this study was to determine the acute effect of 30 and 90 seconds of static stretching on vertical jump performance. Thirty-one university students completed three sessions in random order. After a warm-up and baseline sit-and-reach test, each participant then rested (control session), performed 30 seconds of static stretching (30-second session), and performed three repetitions of 30 seconds of static stretching (90-second session) followed by a second sit-and-reach test and three vertical jumps. The two-way repeated measures analysis of variance showed a statistically significant increase in range of motion (ROM) for all three sessions. The increase in ROM for the 30- and 90-second sessions were significantly greater than the

change in ROM for the control session ($p < 0.001$) with no difference in performance measures across the three sessions ($p > 0.05$). Therefore, 30 and 90 seconds of static stretching can promote similar increases in ROM without adversely affecting jump performance.

C. elegans as a Model for Galactosemia. (Poster Presentation)

Michelle West (Biology)

Faculty Research Mentor: Daniel Williams, Biology

Galactosemia is an inherited disorder resulting from the inability to metabolize the simple sugar galactose. Although dietary removal of galactose can diminish the severity of galactosemia symptoms, patients still suffer long-term complications such as poor growth and neurological disorders. To better understand disease pathogenesis of galactosemia, we have identified the *C. elegans* homolog of GALT, one of three enzymes defective in galactosemia patients. Like their human counterparts, worms with mutations in GALT fail to develop when exposed to a galactose-rich diet. In addition, GALT mutants have other phenotypes that suggest abnormal neuronal function and longevity. These results demonstrate the utility of *C. elegans* as a genetic model organism to better understand the mechanism of galactosemia pathology.

Assessing Lifestyle and Hip Range of Motion as it Relates to the Prevalence of Low Back Pain (Oral Presentation)

DeVariay White (Exercise and Sport Science)

Faculty Research Mentor: Sharon Thompson, Health Sciences

Low back pain, a common problem in today's society, affects individuals' comfort in their occupations, their daily tasks, and even in states of rest. The purpose of this research was to determine correlations between the prevalence of low back pain and hip range of motion (ROM). Participants were composed of patients at a chiropractic office. Methods included a low back pain assessment, the Oswestry Disability Questionnaire as well as a ROM hip assessment using an inclinometer. The ROM assessment evaluated left and right hip flexion, hip extension, and hip internal and external rotation. Analyzing variables that potentially relate to the prevalence of low back pain will allow for the development of practices for prevention. Results will be discussed.

Monitoring of Winyah Bay in Georgetown, SC (Poster Presentation)

Kristina Woodford (Marine Science)

Faculty Research Mentor: George Boneillo, Marine Science

Winyah Bay is an estuary fed by the Black, Big Pee Dee, Little Pee Dee, Sampit, and Waccamaw Rivers. Cruises were conducted in Winyah Bay to examine water quality and to measure nutrient levels. Samples from stations in the more anthropogenically influenced upper bay were compared to samples from more pristine middle and lower bay. Dissolved oxygen levels less than 4.0 mg/L were observed near the head of the estuary during the summer. During the beginning of October 2015, a large rain event caused a decrease in salinity, nutrients, and chlorophyll. Nutrient bioassay experiments were conducted to examine nutrient limitation in Winyah Bay. Results indicate that during the summer and fall of 2015, Winyah Bay was both light and nitrogen limited. Phytoplankton tended to be more nitrogen limited near the mouth of Winyah Bay, where nutrient concentrations and turbidity were observed to be lower.

Johann Sebastian Bach's Signature Loops: Interpreting the Underlying Temperament System of the Well-Tempered Clavier (Oral Presentation)

Christopher Wright (Music)

Faculty Research Mentor: Eric Crawford, Music

Pianists consider Johann Sebastian Bach's The Well-Tempered Clavier to be the Holy Grail of music technique and musicianship. Bach used preludes and fugues that explore every tonality in order to show the tuning possibilities for his harpsichord. This was a monumental task because musicians during the Baroque period could not agree upon a tuning approach that avoided distasteful intervals in certain keys. Yet scholars debate the manner in which Bach was able to complete this task. The most striking research involves Bach's autograph on the front cover of The Well-Tempered Clavier, which contains a series of eleven loops placed over "Das Wohltemperirte Clavier." In my study, I reveal that the loops are actually in one circular diagram and outline a chromatic sequence. My study explains this new reading of Bach's autograph, which will enable scholars and even harpsichord tuners to understand the chromatic tempering that defines Das Wohltemperirte Clavier.

Genetic Analysis of ROS-Mediated Neurodegeneration in C. elegans (Oral Presentation)

Lyndsay Young (Marine Science)

Faculty Research Mentor: Daniel Williams, Biology

Neurodegeneration has significant impacts on human health, but the molecular mechanisms of degeneration are not well understood. Our lab uses the model organism *C. elegans* to study the genes and molecules that are involved in the

degeneration process. Specifically, we trigger reactive oxygen species (ROS)-mediated neurodegeneration using the optogenetic photosensitizer KillerRed. We previously found that ROS-mediated cell death is independent of the worm ryanodine receptor, which is encoded by the gene *unc-68*. As this gene has been shown to be necessary for other paradigms of neurodegeneration, our results suggest there are multiple pathways of neurodegeneration. We are expanding our genetic analysis by testing the requirement other genes involved in intracellular Ca²⁺ signaling for ROS-mediated neurodegeneration. Through this genetic dissection, we hope to further define the role of Ca²⁺ in ROS-mediated neurodegeneration.