

4-1-2014

2014 Undergraduate Research Competition Program

Coastal Carolina University

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2014 Celebration of Inquiry

The Human Spirit

“The human spirit is stronger than
anything that can happen to it”

George C. Scott

Coastal Carolina University

Undergraduate Research Competition

April 1st and 2nd, 2014

Brittain Hall, 1st Floor

Coastal Carolina University Annual Undergraduate Research Competition

Tuesday, April 1st, 2014 and
Wednesday, April 2nd, 2014
Brittain Hall

- ✓ **What:** Each *spoken session* will include a 10-12 minute presentation by an undergraduate student followed by 5-7 minutes of Q&A. A dedicated *poster session* will be held on Tuesday from 3:30pm – 5:00pm and Wednesday from 11:00am – 12:30pm
- ✓ **Where:** All undergraduate research competition sessions will be scheduled on the first floor of Brittain Hall.
- ✓ **How:** Each session will be judged based on a rubric distributed ahead of time to all presenters. Judges will be Coastal Carolina University faculty. **Award recognition will be at the Honors Convocation on Friday, May 10, 2013 at 3pm.**

Tuesday, April 1st

Oral Session I – 2pm -3:20pm

Poster Session I – 3:30pm-5pm

2:00 pm- 2:20 pm [BTH 101]

Kayla Smith

Faculty Mentor: Michelle Barthet

"Characteristics and Effects of Muscular Dystrophy in Broiler Chickens"

2:00 pm- 2:20 pm [BTH 112]

Alexander Tavernier

Faculty Mentor: John Schiro

"Augmented Reality and the Future of Technology"

2:00 pm- 2:20 pm [BTH 114]

Nathaniel Grimes

Faculty Mentor: Robert Salvino

"Institutions of the Shark Fin Market: Roles of Externalities and Incentives"

2:20 pm- 2:40 pm [BTH 101]

Marek Jemdrassak and Wil Merchant

Faculty Mentors: Var Limpasuvan, Roi Gurka and Erin Hackett

"Impact of Particles' Physical Attributes on Settling Velocities in Sediment Transport"

2:20 pm- 2:40 pm [BTH 112]

Ali Cohen

Faculty Mentor: Laura Villegas Meredez

"How the Values, Attitudes and Cultures of Difference Regions are Reflected in the Languages they Speak"

2:20 pm- 2:40 pm [BTH 114]

Richard Taylor, Desiree Fair, Deandra Lipscomb, and Victoria Wilkinson

Faculty Mentor: Monica Fine

"Assessing Perceptions and Attitudes of an Extreme Sports Park in the Myrtle Beach Area"

2:40 pm- 3:00pm [BTH 101]

Serena Flewelling

Faculty Mentor: Scott Parker

"Interactive Effects of Temperature and Oxygen Concentration on Growth and Development of Lizard Embryos"

2:40 pm- 3:00pm [BTH 112]

Katelyn Dawsey

Faculty Mentor: Corinne Dalio

"Cultivation Theory: Violence in Video Games"

2:40 pm- 3:00pm [BTH 114]

Alison McQuarri

Faculty Mentor: Brandi Neal

"Salivary Cortisol Levels of Paramedics with Controlled Static Work Schedules"

3:00 pm- 3:20 pm [BTH 101]

Samson Ahmed

Faculty Mentor: Daniel Williams

"KillerRed-Mediated Neurodegeneration in Caenorhabditis elegans"

3:00 pm- 3:20 pm [BTH 112]

Meghan Laffin

Faculty Mentor: Wes Fondren

"What Conspiracy Culture Means to the News"

3:00 pm- 3:20 pm [BTH 114]

Amanda Bernadyn

Faculty Mentor: Maggie Morehouse

"Child Abuse, Moral Reasoning & Criminality"

Poster Session I

3:30pm-5:00pm

Brittan Hall - first floor

See individual listing on Poster Session page

Wednesday, April 2nd

Oral Session II - 9-11:00am

Poster Session II - 11am-12:30pm

Oral Session III - 1-3:00pm

9:00am-9:20am [BTH 101]

Christian Barrett

Faculty Mentor: Valdislav Gulis

"Extracellular Enzyme Activity of Plant Litter-Associated Microorganisms Depends on Dissolved Inorganic Nutrient Availability"

9:00am-9:20am [BTH 112]

Jacob Wade

Faculty Mentor: Rob Young

"Sex Determination of Bottlenose Dolphins from Dorsal Fin Photo-Analysis"

9:00am-9:20am [BTH 114]

Sadara Shine

Faculty Mentors: Richard Aidoo and Joan Piroch

"The Globalization of Human Rights in Post-genocide Rwanda"

9:20am-9:40am [BTH 101]

Danielle R. Ravancho

Faculty Mentor: Michelle Barthelet

"The Discovery of Novel Genes Amplified during Tail Regeneration of *Anolis carolinensis*"

9:20am-9:40am [BTH 112]

Taylor LaChance

Faculty Mentor: Jennifer Sellers

"Renewable Energy in the United States and What is Best for South Carolina"

9:20am- 9:40am [BTH 112]

Mary Anderson

Faculty Mentors: Greg Martel and Karen Aguirre

"Effectiveness of Gaming Systems on Balance in Older Individuals"

9:40am -10:00 am [BTH 101]

Breanna Willeford, Sierra Willeford and Duncan Perry

Faculty Mentors: Fang Ju Lin and Taianyi Wu

"Effect of Grape Seed Extract in Fruit Fly *Drosophila* Huntington's Disease Model"

9:40 am - 10:00 am [BTH 112]

Ashleigh Simmons

Faculty Mentor: Linda Palm

"Blame Attribution as a Function of Sexual Assault Victim Characteristics"

9:40 am – 10:00am [BTH 114]

Dominique DeWit

Faculty Mentor: Pamela Martin and Holly Tankersly

"Global Stability through a Sustainable Development Approach"

10:00am – 10:20 am [BTH 101]

Michael Sarson

Faculty Mentor: James Wright

"Retrospective Review Comparing Crossed-screw and Locking Plate Fixation of Hallux Metatarsophalangeal Joint Arthrodesis"

10:00am – 10:20 am [BTH 112]

Kerry Smith

Faculty Mentor: Jon Han Kim

"Underdog Advantage on Creativity"

10:00am – 10:20 am [BTH 114]

Anastasia Rhodes

Faculty Mentor: Holly Tankersly

"Russian Democracy and the Civil Society behind its Flaws"

10:20am- 10:40am [BTH 101]

Kayla Liland

Faculty Mentor: Sharon Thompson

"Sports Nutrition Reinforcement"

10:20 am – 10:40 am [BTH 112]

Melissa Merrill

Faculty Mentor: John Piroch

"Social Support and Fear of Negative Evaluation as a Function of Gender"

10:20am – 10:40am [BTH 114]

Tahzeneka Stanley

Faculty Mentor: K. Holody

"Experience of Graduating Seniors Correlating with Difficulty of Landing a Job in their Profession"

10:40am – 11:00 am [BTH 101]

Jessica Otten

Faculty Mentor: Sharon Thompson

"Help Me Help Your Diabetes"

10:40am- 11:00am [BTH 112]

Stephen Rodgers

Faculty Mentor: Terry Pettijohn

"Embodiment: Dirty Hands versus Dirty Mouths"

10:40 am – 11:00 am [BTH 114]

Jenifer Butler

Faculty Mentor: Tripthia Pillai

"Renaissance Literature: Deconstructing a Monarchy"

Poster Session II

11:00am-12:30pm

Brittan Hall – first floor

See individual listing on Poster Session page

1:00pm – 1:20 pm [BTH 101]

Janel Reeves

Faculty Mentor: Sharon Thompson

"Call a Vegetable a Vegetable: Perceptions and Taste Ratings"

1:00pm – 1:20 pm [BTH 112]

Anthony Roddrecia

Faculty Mentor: Joan Piroch

"Power Poses and Self-Esteem"

1:00pm- 1:20 pm [BTH 114]

Steven Sargent

Faculty Mentor: Maggi Morehouse

"Digital Archiving of Black WWII Soldiers"

1:20pm – 1:40 pm [BTH 101]

Dori Sanders

Faculty Mentor: Sharon Thompson

"Biking in Kind Environments: Study of Attitudes and Knowledge of Bicycle Safety"

1:20 pm – 1:40 pm [BTH 112]

Anthony Germany

Faculty Mentor: Joan Piroch

"Optimism and Constitutional Knowledge in a Sample of College Students"

1:20pm –1:40 pm [BTH 114]

Mark Jessup

Faculty Mentor: John Navin

**"Artless and Uncultivates as the Soil which
Fosters Them"**

1:40pm –2:00 pm [BTH 101]

Ina Troutman

Faculty Mentor: Sharon Thompson

**"Survey Interpretation and Data Analysis
of Coastal Cycles"**

1:40pm – 2:00pm [BTH 112]

Ryan King

Faculty Mentor: Terry Pettijohn

**"Personality Perception in Nonverbal
Communication"**

1:40pm- 2:00pm [114]

Madelyn Johnson

Faculty Mentor: Aneila Barnes

"Women of Augustan Rome"

2:00pm -2:20pm [BTH 101]

Kaitlyn Essel

*Faculty Mentors: Fredanna M'Cormack and
Sharon Thompson*

**"Development, Implementation and
Evaluation of a Pilot Dietary Intake Tool
Appropriate for a University Campus
Population"**

2:00pm-2:20pm [BTH 112]

Alysha McGrath

Faculty Mentor: Joan Piroch

**"A Study of Pet Bonding, Interpersonal
Trust, and Helping Attitudes as a Function
of Gender and Pet Ownership"**

2:00pm-2:20pm [BTH 114]

Nicole Johnson

Faculty Mentor: Suheir Daoud

"Lost Generation: Syrian Child Refugees"

Poster Sessions

Tuesday Poster Session I

3:30pm – 5:00pm

Brittain Hall, Rm 108 and 109

Bakal, Layla and Samuel McGee

Synthesis of Flinderole C Analogues (#1)

Faculty Mentor: Bryan Wakefield

Bruce, Jessica, Rachel Goff and Michelea Polly

Intensity and Prevalence of Trematode Metacercariae in *Donax variabilis* in South Carolina at Waites Island, Myrtle Beach State Park, and Huntington Beach State Park (#19)

Faculty Mentor: Erin Burge

Chaplin, Kelly

A New Approach to the Synthesis of Flinderole C (#3)

Faculty Mentor: Bryan Wakefield

Dunn, Courtney

Residence Patterns of Inshore Bottlenose Dolphin (*Tursiops truncatus*) from Little River, SC to Myrtle Beach, SC (#17)

Faculty Mentor: Rob Young

Floyd, Richard

Growth of Metal Nanostructures via Physical Vapor Deposition (#27)

Faculty Mentor: Chris Moore

Grimes, Nathaniel

Assessment of Evaporation duct Models as a Source of Uncertainty in Radar Wave Propagation Simulations (#23)

Faculty Mentor: Erin Hackett

Griswold, Joseph, Charles Klinnger and Coleen Haley

Prevalence and Intensity of Ectoparasites on *Fundulus heteroclitus* as a Function of Size in Two Marsh Systems in South Carolina, USA (#21)

Faculty Mentor: Erin Burge

Jemdrassak, Marek and Wilmont Merchant

Particles' Settling Velocities in Turbulent Conditions (#25)

Faculty Mentors: Var Limpasuvan, Roi Gurka, and Erin Hackett

Merchant, Wilmont and Marek Jemdrassak

Impact of Particles' Physical Attributes on Settling Velocities in Sediment Transport (#29)

Faculty Mentors: Var Limpasuvan, Roi Gurka, and Erin Hackett

McGreevy, Wylee

Environmental Accounting: Catching Companies who refuse to go Green Red-Handed (#13)

Faculty Mentor: Sheila Mitchell

Munoz, Meliton

An Evaluation of SNAP Nutrition Education Content in a South Carolina Community (#15)

Faculty Mentor: Fredanna M'Cormack

Pride, Derek and Riane Petersman

The Quest for a Bacteriophage Lytic to *Staphylococcus aureus* and *Escherichia coli* (#5)

Faculty Mentor: Paul Richardson

Segreto, John and Christine Martinett

New Applications of a Bronsted Acid Catalyzed Friedel-Crafts Reaction (#7)

Faculty Mentor: Bryan Wakefield

Thurn, Nicholas and Caitlyn Baker

Development of a DNA Fingerprinting Protocol for Differentiation between Bacteriophages in Aquatic Environments (#9)

Faculty Mentor: Paul Richardson

Wesel, Jordan and Ina Troutman
D-amino Acid Inhibitory Properties on *Staphylococcus aureus* and *Escherichia coli* Growth (#11)

Faculty Mentor: Paul Richardson

Wednesday Poster Session II

11:00am-12:30pm

Brittain Hall, Rm 108 and 109

Ashland, Tyler

Determination of Rate of Reaction for the Hydrolysis of Phthalates with Various Bases (#2)

Faculty Mentor: Kevin McWilliams

Banton, Mallory

The Geometric Breakdown of the Zn²⁺ Chelating Pocket within the ZN-1 Domain of *E. coli* Leucyl-tRNA Synthetase Contribute to its Catalytic Cycle (#4)

Faculty Mentor: Rachel Whitaker

Baykal, Layla

Bacterial Toxicity Results from Mutations Made in the Translocation Peptide of Leucyl-tRNA Synthetase (#6)

Faculty Mentor: Rachel Whitaker

Carrone, Anthony

Tattoos and Risk Taking Behavior in College Students (#16)

Faculty Mentor: Miranda Brenneman

Cunningham, Macy and Delanie Sage

Continuous Ground and Lake Water Level Monitoring in Briarcliffe Acres, SC (#18)

Faculty Mentors: Susan Libes, Rick Peterson, Nancy Edelman, and Tom Garigen

Dimkovikj, Aleksandar

Comparison of Common Non-Point Source Fecal Pollution: Fecal Indicator Bacteria vs. Host Specific Genetic qPCR markers in Avian and Canine Fecal Matter (#20)

Faculty Mentor: J. Michael Trapp

Hance, Cameron

Synthesis in Osmium-olefin Compounds (#8)

Faculty Mentor: Kevin McWilliams

Hartigan, Valerie

Stable Isotope Analysis in Deep Sea Cephalopods (#22) of the Bear Seamount

Faculty Mentor: Julianna Harding

Johnson, Amy

Creating a Pocket-sized Biosensor for the Detection of Heavy Metals in Drinking Water (#10)

Faculty Mentor: Rachel Whitaker

Marchini, Emily

Prey Capture in Response to Removing Cilia from Venus Flytraps (#24)

Faculty Mentor: John Hutchens

Martin, Amber

Functional Response of Venus Flytraps (*Dionaea muscipula*) (#26)

Faculty Mentor: John Hutchens

Ritter, Valoria

Biomaterial Development for the Removal of Metal Contaminants in Water (#12)

Faculty Mentor: Rachel Whitaker

Smith, Cody

Bioremediation of Aquatic Ecosystems
using Engineered Laccase for the
Degradation of Ethinylestradiol and
Bisphenol-A (#14)

Faculty Mentor: Rachel Whitaker

Faculty Mentor: Michelle Barthet

Trabolsky, Romi

Investigating Maturase Evolution (#28)

DRAFT

Abstracts: 2014 Undergraduate Research Competition
(Alphabetical by Presenter)

KillerRed-Mediated Neurodegeneration in *Caenorhabditis elegans* (Oral Presentation)

Ahmed, Samson (Biology Major, Pre-Med)

Faculty Research Mentor: Daniel Williams

The origin of neurological diseases is an incompletely understood area of medicine, which makes treatment and prevention difficult. To fully comprehend their complex roots, I will focus on disease progression at the cellular level of *Caenorhabditis elegans* by using a tool called KillerRed. Through a sequence of controlled experiments, I have discovered that illumination of KillerRed expressing worms disrupts the structural and functional integrity of neurons. This should greatly interest the scientific and medical communities.

Effectiveness of Gaming Systems on Balance in Older Individuals (Oral Presentation)

Anderson, Mary E. (Biology Major)

Faculty Research Mentors: Greg Martel and Karen Aguirre

Balance training using gaming systems, called exergaming, is a rising trend for reducing fall risk in older individuals. Previous studies have conducted research pertaining to gaming systems and traditional balance training, however there is a lack of comparison between gaming systems. This study was performed to determine the effectiveness of two gaming systems, the Wii Fit and Xbox Kinect, as compared to traditional balance training. This study was performed with subjects (N=5) over the age of 65, in good health, randomly placed in one of the three balance training groups: Wii Fit (n=2), Xbox Kinect (n=2), and Traditional balance training (n=1). Tests for balance were conducted before a six week control period, after the control period, and after a six week intervention period. The study showed decreased fall risk in subjects who performed exergaming balance training as compared to the individual who performed traditional balance training.

Determination of Rate of Reaction for the Hydrolysis of Phthalates with Various Bases (Poster Presentation)

Ashlund, Tyler H. (Chemistry Major)

Faculty Research Mentor: KevinMcWilliams

Phthalates mostly come from plasticisers for improving the flexibility of polymeric materials. When these materials degrade, these phthalates have been known to accumulate in the environment; therefore it is useful to know about various side reactions occurring with the pollutants within the environment. Through experimentation I determined the Rate Law for the Hydrolysis of such Phthalates by use of three hour reaction times and quantification through Gas Chromatography- Mass Spectrometer.

The Geometric Breakdown of the Zn²⁺ Chelating Pocket within the ZN-1 Domain of *E. coli* Leucyl-tRNA Synthetase Contributes to its Catalytic Cycle (Poster Presentation)

Banton, Mallory J. (Biology Major)

Faculty Research Mentor: Rachel Whitaker

The *E. coli* leucyl-tRNA synthetase (LeuRS) enzyme is part of a larger family of enzymes known as aminoacyl-tRNA synthetases (aaRS). For many of these aaRSs, a zinc binding domain(s) plays a central role in the process of aminoacylation. Chelation of Zn²⁺ within the zinc binding domain (ZN-1) changes the domain's geometric configuration. The rigid geometric shape of the zinc-binding pocket appears to breakdown as the ZN-1 domain transitions between the aminoacylation and editing conformations.

Extracellular Enzyme Activity of Plant Litter-Associated Microorganisms Depends on Dissolved Inorganic Nutrient Availability (Oral Presentation)

Barrett, Christian (Biology Major)

Faculty Research Mentor: Vladislav Gulis

Litter-associated microbial decomposers, which are important intermediaries of carbon and energy flow in streams, obtain nitrogen and phosphorus from the substrate and water column. We measured the activity of phosphatase, chitinase, leucine aminopeptidase and beta-glucosidase associated with decomposing litter differing in carbon quality and N and P content (maple and rhododendron leaf litter, wood veneers) in streamside channels with manipulated concentrations of N, P, and N:P ratios. We found statistically significant effects of dissolved nutrients.

Bacterial Toxicity Results from Mutations Made in the Translocation Peptide of Leucyl-tRNA Synthetase *(Poster Presentation)*

Baykal, Layla N. (Biology Major)

Faculty Research Mentor: Rachel Whitaker

Leucyl-tRNA synthetase (LeuRS) is among the aminoacyl-tRNA synthetases (aaRSs) family that ensures translation through providing aminoacylated tRNA products that become incorporated by the ribosome. LeuRS has two domains, the aminoacylation and the CPI editing domains. We believe that we have generated mutations within LeuRS that alter the translocation event of tRNA, which lead to bacterial toxicity in *Escherichia coli* (*E. coli*). Misaminoacylation and reduced rates of aminoacylation and hydrolysis are attributed to this intracellular toxicity.

Synthesis of Flinderole C Analogues *(Poster Presentation)*

Baykal, Layla N. (Biology Major) and Samuel T. McGee

Faculty Research Mentor: Bryan Wakefield

Natural products, which are produced by plants, animals and microorganisms, often serve as the starting point for the development of new drugs for the treatment of human disease. Flinderole C is a naturally occurring compound that has shown activity against the DD2 strain of malaria, which is chloroquine resistant. Simplified analogues of this compound are currently being constructed. It is envisioned that they will maintain the desired activity while making the synthesis more straightforward.

Child Abuse, Moral Reasoning & Criminality *(Oral Presentation)*

Bernadyn, Amanda (Sociology Major)

Faculty Research Mentor: Maggi Morehouse

Child abuse is a major social problem in today's society. Delinquency and criminality are only two of the possible consequences of child abuse (Agnew, et.al 2012, Hancock 1982, Olson 2013, Widom 1996). Although, not every case of abuse will lead to criminal activity (Peltzer 1995, Samenow 2011) there are many cases that do. This paper analyzes cognitive development theory and specifically moral reasoning by looking at case studies of child abuse (Flowe 1996: 1).

Intensity and Prevalence of Trematode Metacercariae in *Donax variabilis* in South Carolina at Waties Island, Myrtle Beach State Park, and Huntington Beach State Park *(Poster Presentation)*

Bruce, Jessica L. (Marine Science Major), Rachel C. Goff and, Micheala R. Polly

Faculty Research Mentor: Erin J Burge

Coquina clams, *Donax variabilis* (n = 3,450) were examined to determine the intensities of trematode metacercariae, a transmissive resting stage within the parasite life cycle. *D. variabilis* (2 - 22 mm) were collected from four beach heights during February, March and April 2013 at Waties Island, Huntington Beach State Park, and Myrtle Beach State Park, South Carolina. Intensity and prevalence of metacercariae significantly increased with shell length. Clams > 12 mm had 100% prevalence.

Renaissance Literature: Deconstructing a Monarchy *(Oral Presentation)*

Butler, Jenifer (English Major)

Faculty Research Mentor: Tripthi Pillai

My research combines historiography, literary analysis, and critical theory to study the impact of Queen Elizabeth I (lifespan: 1533-1603; England's monarch: 1558-1603) on Renaissance literature. I trace particular components of the literature—characterization, plot, and theme—and analyze how these narrative contemporary history. Specifically, I demonstrate through a study of plays by Shakespeare and his contemporaries those effects of gender deconstruction that were mobilized by Elizabeth I and were popularized within the Renaissance literary imagination

Tattoos and Risk Taking Behavior in College Students *(Poster Presentation)*

Carrone, Anthony (Psychology Major)

Faculty Research Mentor: Miranda Brennehan

Researchers in this study examined college students with and without tattoos to determine whether there is a difference in risk taking behavior between groups. A total of 140 participants completed a series of surveys

and computer tests measuring risky behavior. Although some differences were found, the presence of a tattoo on an individual does not indicate involvement in risk taking behavior.

A New Approach to the Synthesis of Flinderole C *(Poster Presentation)*

Chaplin, Kelly M. (Biology Major)

Faculty Research Mentor: Bryan Wakefield

Flinderole C is an alkaloid that shows antimalarial activity against the chloroquine resistant DD2 strain of malaria. Our group has attempted to synthesize the core of the molecule without success. Recently, we adopted a new approach to the molecule that using a Mannich-type reaction to install the required allylic alcohol instead of a cross-metathesis. This change should allow for the synthesis of the flinderole core so new compounds can be constructed for biological testing.

How the Values, Attitudes and Cultures of Different Regions Are Reflected in the Languages They Speak *(Oral Presentation)*

Cohen, Ali (Special Education Major)

Faculty Research Mentor: Laura Villegas Meredez

The rules of syntax vary by language and, to some extent, even dialects within that language. Though it often goes unnoticed, the ways languages are constructed reflect the values, attitudes and cultures of the countries and/or regions in which they are spoken. This research examines the relationship between varying languages and the cultures they reflect. Additionally, it also examines to what extent contrasting languages contribute to tangible outcomes such as brain development, economic preparedness, etc.

Walt Disney World: A Rite of Passage *(Oral Presentation)*

Cox, Grace (History Major)

Faculty Research Mentor: Amanda Brian

This oral presentation illustrates how the theme park Walt Disney World came to be seen as a rite of passage and a fundamental aspect of raising the American child. The goal is to show this phenomenon through examining the importance of memorable characters as well as the history of the family vacation. Such conclusions are achieved through research on leisure and the family, and the successful marketing of WDW as the "happiest place on earth."

Continuous Ground and Lake Water Level Monitoring in Briarcliffe Acres, SC *(Poster Presentation)*

Cunningham, Macy (Marine Science Major) and Delanie Sage

Faculty Research Mentors: Susan Libes, Rick Peterson, Nancy Edelman, and Tom Garigen

Briarcliffe Acres and the Horry County Stormwater Department entered into a contract on May 2012 with Coastal Carolina University to monitor lake and groundwater levels around Briarcliffe Acres, a coastal community located in northeastern South Carolina. After several periods of drought, this small community (about 200 homes) set out with a few questions in mind to help them better understand and manage their water resources and irrigation policies: How does irrigation from well water influence lake and groundwater levels? How does irrigation from the lakes influence lake and groundwater levels? How does rain, or lack of it, influence lake and groundwater levels? To help answer these questions, a monitoring program was instituted. Three Onset Hobo™ water loggers, recording every fifteen minutes, are deployed in three groundwater wells that are positioned in an upslope transect perpendicular to the shore. Water loggers are also deployed in two lakes situated in the middle of the transect. An additional Hobo logger is used to record barometric pressure. Data from the water level loggers are downloaded every four weeks and corrected for temperature and barometric pressure. The data are posted on a public website located at: <http://bccmws.coastal.edu/bagw/index.html>. The entire dataset, of about twenty months, shows very little evidence of impacts from irrigation pumping on either groundwater wells or lake levels. There seems to be a small amplitude diurnal oscillation in the water levels in the well closest to Briarcliffe's oceanfront during warm weather months. This oscillation was more noticeable in the summer of 2012 with a magnitude of about six to eight centimeters and occurred when the water table was at the lowest levels recorded to date. In the summer of 2013, when the levels were at their highest recorded levels, the diurnal oscillation reemerged, but with a smaller, four-to-six centimeter amplitude. The lowest part of the daily oscillation seems to be in the evening around 1700 and is thought to result from evapotranspiration. Seasonal trends in water levels follow seasonal precipitation patterns. In general, the upstream groundwater levels are higher

in elevation that the lakes suggesting the groundwater supplies water to the lakes. The project started with concern over low water levels such that irrigation restrictions were being considered. A few months after the start of data collection, the water table started to rise in response to increased rainfall. Given the steady rise in the water table's level, the focus of the project has transformed from developing irrigation restrictions to troubleshooting septic tank problems, especially for properties located further downslope near the ocean.

Cultivation Theory: Violence in Video Games *(Oral Presentation)*

Dawsey, Katelyn (Communication Major)

Faculty Research Mentor: Corinne Dalelio

Various studies have been performed on violence and aggression shown in the media and if it can have an effect on its viewers, but not many have studied the effect of video games. Video games have become more graphic, realistic, and violent than ever before. Through qualitative research methods such as participant observation, interviews and focus groups we can better determine if exposure has an effect on the gamer's aggressive or violent behaviors or thoughts.

Comparison of Common Non-Point Source Fecal Pollution to Recreational Waters: Fecal Indicator Bacteria vs. Host Specific Genetic qPCR Markers in Avian and Canine Fecal Matter *(Poster Presentation)*

Dimkovikj, Aleksandar (Marine Science and Biochemistry Major)

Faculty Research Mentor: J. Michael Trapp

Water quality impairments are commonly associated with elevated concentrations of fecal indicator bacteria (FIB). Substrate based bacterial culturing methods and molecular techniques are used when quantifying FIB and determining water quality impairments. We compared regulatory FIB (*E. coli*) to host-specific qPCR assays on direct fecal grab samples. Results suggest that inter-specimen variability makes interpretation of qPCR results difficult, while the time series study indicates that the ratio of FIB to genetic marker changes over time.

Global Stability through a Sustainable Development Approach *(Oral Presentation)*

deWit, Dominique (Political Science Major)

Faculty Research Mentor: Pamela Martin

Approved for submission

In recent years, the global economic system has been marked by the economic crisis of 2008-09, widening inequality, environmental issues and climate change. This paper provides critiques to the capitalist system by assessing recent market failures and the roles international development institutions have played to bring about sustainable development. The challenges facing neoliberalism have grown over time, and simultaneously alternative ideas and models have developed that potentially provide a more holistic approach to development, human well-being, socio-economic equality, and environmental sustainability. Ideas vary from viewing the economic system as a subpart of a finite ecosystem, altering humanity's living standards to one more in harmony with nature and respecting the planet's biophysical limits. Long-term sustainability will require a step away from economic growth models, a global transition to restrain use of energy and materials, and embracing the welfare and happiness of populations to measure societal progress.

Residence Patterns of Inshore Bottlenose Dolphin (*Tursiops truncatus*) from Little River, SC to North Inlet, SC *(Poster Presentation)*

Dunn, Courtney (Marine Science Major)

Faculty Research Mentor: Rob Young

The current lack of understanding regarding population structures of the east coast bottlenose dolphins (*Tursiops truncatus*) makes planning or implementation of conservation plans difficult, or impossible. Seasonality of sightings and movement of bottlenose dolphin were examined by comparing photo-identification efforts from a dolphin watch group in Little River to research-based photo-identification efforts in Myrtle Beach. Understanding the local stocks can contribute to understanding stock structure along the east coast of the United States.

Development, Implementation and Evaluation of a Pilot Dietary Intake Tool Appropriate for a University Campus Population *(Oral Presentation)*

Essel, Kaitlyn May (Health Promotion Major)

Faculty Research Mentors: Fredanna A.D. M'Cormack and Sharon Thompson

Health intervention programs, such as MyPlate on Campus, exist but lack evaluation. Data collection tools can gather health behavior information. A valid, reliable instrument can help evaluate specific population needs to tailor nutritional programming. A survey instrument was developed based on existing peer-reviewed instruments for a mid-sized college campus population and included a food frequency questionnaire and brief survey to collect qualitative information about the instrument. Results of pilot study and survey will be discussed.

Interactive Effects of Temperature and Oxygen Concentration on Growth and Development of Lizard Embryos *(Oral Presentation)*

Flewelling, Sarena (Biology Major)

Faculty Research Mentor: Scott Parker

The aim of this study is to provide a test of predicted consequences of increasing air temperatures on developmental physiology of lizard embryos. We incubated eggs of the South Carolina ground skink (*Scincella lateralis*) at warm (33 °C) and cool (22 °C) temperatures at oxygen concentrations ranging from hypoxic (9 and 15% oxygen) to normoxic (21% oxygen). These results suggest that in reptiles, the embryonic developmental period may be especially vulnerable to the effects of prolonged periods of high temperature predicted to occur with global warming.

Growth of Metal Nanostructures via Physical Vapor Deposition *(Poster Presentation)*

Floyd, Richard D. Jr. (Applied Physics Major)

Faculty Research Mentor: Chris Moore

We have used a low-cost single zone tube furnace to fabricate metal nanostructures on silicon substrates. Specifically, we evaporate copper, zinc, and gold and control furnace properties such as temperature, carrier gas pressure and composition, and the distance from the evaporant to the substrate to enhance nanowire growth. This project should lead to the creation of a new, advanced laboratory activity for physics majors.

Optimism and Constitutional Knowledge in a Sample of College Students *(Oral Presentation)*

Germany, Anthony M. (Psychology Major)

Faculty Research Mentor: Joan Piroch

Optimism has been studied in relation to many variables such as suicide, perceptions of life, personality variables, etc. Research supports a relationship between optimism and knowledge; however, the nature of that relationship is unclear. This study was designed to assess college students' knowledge of the amendments of the Constitution related to scores on an optimism inventory. An understanding of these rights may promote optimism. Non-significant results were discussed related to poor knowledge scores.

Assessment of Evaporation Duct Models as a Source of Uncertainty in Radar Wave Propagation Simulations *(Poster Presentation)*

Grimes, Nathaniel G. (Marine Science and Economics Major)

Faculty Research Mentor: Dr. Erin Hackett

Radar system performance varies depending on environmental conditions. Ducting is a unique atmospheric phenomenon that results in significant changes to a system's performance; thus, models are needed to simulate these conditions. Using inverse-problem techniques, this study evaluates currently implemented duct models compared to measured atmospheric environments as well as the impact of their inaccuracy on simulated radar wave propagation. Improvement of duct models will lead to more accurate assessments of radar system performance.

Institutions of the Shark Fin Market: Roles of Externalities and Incentives *(Oral Presentation)*

Grimes, Nathaniel G. (Marine Science and Economics Major)

Faculty Research Mentor: Dr. Robert Salvino

This study analyzes the role institutions have in shaping incentives within the shark fin market. It combines literature findings from multifarious fields of fisheries economics, shark biology, and institutional economics

to provide an argument that institutions, both formal and informal, were fundamental in establishing the market, guiding how it operates currently, and are needed to find ways to correct for negative externalities engendered by sharks' functions in ecosystems. Possible courses of action are discussed.

Prevalence and Intensity of Ectoparasites on *Fundulus heteroclitus* as a Function of Size in Two Marsh Systems in South Carolina, USA *(Poster Presentation)*

Griswold, Joseph (Marine Science Major), Charles Klingler, and Colleen Haley

Faculty Research Mentor: Erin Burge

One hundred and forty nine mummichogs, *Fundulus heteroclitus*, were examined for gill and skin parasites from two different sampling locations in South Carolina, Waties Island and Murrells Inlet. Mummichogs are a food source for multiple organisms and appear to be an important component in energy flow within estuaries. There were significant differences in total skin parasite intensities, *Trichodina sp.* intensities, and unidentified protozoan parasite intensities between sampling sites.

Synthesis of Osmium-olefin Compounds *(Poster Presentation)*

Hance, Cameron B. (Chemistry and Marine Science Major)

Faculty Research Mentor: Kevin M. McWilliams

Abstract: Group 8 organometallic compounds involving olefins have been studied extensively due to the activation of the olefin upon binding to the metal core. The reactivity of these compounds is known for the iron species, but less so for ruthenium and osmium. This project is directed toward synthesizing a couple new olefin-containing compounds wherein osmium is the metal core in order to investigate the reactivity of the olefin to simple external nucleophiles, such as phosphines or amines.

Stable Isotope Analysis in Deep Sea Cephalopods of the Bear Seamount *(Poster Presentation)*

Hartigan, Valerie J. (Marine Science and Biology Major)

Primary Mentor: Mike Vecchione, NOAA/NMFS National Systematics Lab, Smithsonian National Museum of Natural History

Faculty Research Mentor: Juliana Harding

The analysis of carbon and nitrogen stable isotopes can be used to reconstruct the food web of nearly any habitat. Using beaks extracted from deep-sea cephalopods, I performed stable isotope analyses to show that interspecific variation in trophic position exists between different cephalopod species of the Bear Seamount deep-sea community. Intraspecific dietary shifts with growth were also illustrated and a new method established for stable isotope analysis of beaks from juvenile and subadult individuals.

Impact of Particles' Physical Attributes on Settling Velocities in Sediment Transport *(Oral Presentation)*

Jendrassak, Marek (Physics-PreEngineering Major) and Wilmot Merchant

Faculty Research Mentors: Erin Hackett, Varavut Limpasuvan and Roi Gurka.

Sediment transport is a process in which fluid movement entrains solid particles, thereby moving them. In the deposition stage of sediment transport, particles reach a terminal or settling velocity, which is simulated experimentally by placing particles of various size and density into a water-filled tank. Recorded with a high-speed camera, images of the particles' descent are analyzed to compute the particles' settling velocities. Results reveal the sensitivity of settling velocities to particles' physical attributes.

Particles' Settling Velocities in Turbulent Conditions *(Poster Presentation)*

Jendrassak, Marek (Physics-PreEngineering Major) and Wilmot Merchant

Faculty Research Mentors: Erin Hackett, Varavut Limpasuvan and Roi Gurka,

Sediment transport, which is responsible for changing coastal shorelines, involves the deposition or settling of particles, and is influenced by turbulence. This study creates turbulence utilizing an oscillating grid tank facility. Particle trajectories in the water are measured using high-speed imaging techniques to obtain their material acceleration with Lagrangian methods. Results shed light on the interactions between particles and fluid, which improves our understanding of the micro-scale physics involved in sediment transport.

Artless and Uncultivated As The Soil Which Fosters Them *(Oral Presentation)*

Jessup, Mark (History Major)

Faculty Research Mentor: John Navin

Early European colonies in North America often relied upon assistance from Native American neighbors. Conflicts between the two were common, but historians still debate the exact causes of the Yamassee War of 1715-1717 in South Carolina. Through analyzing early colonial correspondences, laws, and court testimony, it becomes clear that the Yamassee attacked in response to abuse by traders, enslavement of their people, ethnocentrism, and encroachment of their land.

Creating a Pocket-Sized Biosensor for the Detection of Heavy Metals in Drinking Water *(Poster Presentation)*

Johnson, Amy (Marine Science Major)

Faculty Research Mentor: Rachel Whitaker

Heavy metal contamination of drinking water is becoming a problem. Exposure in high concentration can lead to neurodegeneration and eventually death. The current method of testing metal contamination in drinking water requires a specially trained technician and expensive equipment. We propose developing an effective and easy to use biodegradable biosensor to test water. It would be made from RNA molecules with the ability to bind to metal ions while tethered to a nanoparticle bead.

Women of Augustan Rome *(Oral Presentation)*

Johnson, Madelyn G. (History Major)

Faculty Research Mentor: Aneilya K. Barnes

Women of the early Roman Empire are notoriously difficult to extract from the extant sources, but the growing field of gender studies leads modern scholars to seek a deeper understanding of these women. I maintain that women, especially of high status, were seen as a necessary threat to the male-dominated social and political order of Augustan Rome; their power was recognized but remained controlled and suppressed for the sake of honor, public image, and tradition.

Lost Generation: Syrian Child Refugees *(Oral Presentation)*

Johnson, Nicole D. (History Major)

Faculty Research Mentor: Suheir Daoud

The Syrian Crisis has left Syrian children as the "lost generation" because they have limited education available to them in the neighboring countries of Lebanon and Jordan. The Syrian Crisis, also known as the Syrian Conflict, began in March of 2011 between the government and the opposing groups. Overcrowding of schools and no transportation to distant refugee camps in Lebanon and Jordan limits education to reach Syrian child refugees.

Personality Perception in Nonverbal Communication *(Oral Presentation)*

King, Ryan (Psychology Major)

Faculty Research Mentor: Terry F. Pettijohn II

The manner in which you form a first impression with employment opportunities, classmates, teachers, voters, and judges gives a societal perception of you. The perceived personality traits of an individual based on a handshake, no handshake, or the placement of an obstruction to the handshake gesture will be experimentally investigated. A person's personality can be accurately determined by the offering or non-offering of a handshake. An obstructed handshake will be least accurately perceived. An estimated sample size of 50 participants will be included in the study. The importance in determining accuracy in perception of one another's nonverbal communication may benefit with therapy sessions, student-teacher relationships, inter-personal communication, and give insight into our own non-verbal behavior.

Renewable Energy in the United States and What is Best for South Carolina *(Oral Presentation)*

LaChance, Taylor (Marine Science Major)

Faculty Research Mentor: Jennifer Sellers

We use energy every day, most of which is produced using fossil fuels. Fossil fuels produce many pollutants that can be dangerous for our health and our planet. With an extensive literature review I have looked at the

most popular types of renewable energy (wind, solar, geothermal, and biofuels) and determined what type of renewable energy would work best along the East Coast and specifically South Carolina.

What Conspiracy Culture Means to the News *(Oral Presentation)*

Laffin, Meghan (Business Management Major)

Faculty Research Mentor: Wes E. Fondren

"In a world where everyone is a publisher, no one is an editor." Content is flooding the web and media is changing. Gathering information used to be hard, and the news was believable. Now, accessing information is easy, but credibility is questionable. Traditional news sources are fighting for their roles as gatekeepers and my research, through a series of surveys, investigates the format in which they can find success.

Sports Nutrition Reinforcement *(Oral Presentation)*

Liland, Kayla (Biochemistry Major)

Faculty Research Mentor: Sharon Thompson

Nutrition is critical for academic and sports performance, and studies have shown the dietary habits of athletes are subpar. This study examined the nutritional knowledge, behaviors, and beliefs of collegiate athletes upon completion of a six-week, nutritional education program, which was planned and implemented by an undergraduate student. Sessions included nutritional practice education, open discussion, voluntary diet analysis, and take-home reference materials. A survey was administered to obtain nutritional knowledge, beliefs, and practices as well as demographic data. Survey results will be discussed. This program provides a model others may adopt to educate and positively reinforce collegiate athletes.

Prey Capture in Response to Removing cilia from Venus Flytraps *(Poster Presentation)*

Marchini, Emily (Biology Major)

Faculty Research Mentor: John J. Hutchens

Cilia on Venus flytraps have been thought to act as a filter by keeping large prey items trapped inside as well as increasing prey capture success. I hypothesized that removal of cilia would not significantly impact length of prey captured or prey capture rate because the plant would miss feeding opportunities if it selectively chose prey based on body length after the trap already closed. Body length of prey captured and prey capture rates were not significantly different between flytraps with and without cilia in the field. This study helps understand the function of cilia on the Venus flytrap.

Functional Response of Venus Flytraps (*Dionaea muscipula*) *(Poster Presentation)*

Martin, Amber D. (Biology Major)

Faculty Research Mentor: John J. Hutchens

This study explored Venus flytrap prey capture through their functional response, the consumption rate of an organism relative to food availability. The functional response was determined in the laboratory by feeding 0 - 6 ants to individual flytraps and comparing the number of ants captured with the number of ants provided. Venus flytraps showed a type II functional response, suggesting that flytraps do not capture all ants provided to them, which differs from previous findings.

A Study of Pet Bonding, Interpersonal Trust, and Helping Attitudes as a Function of Gender and Pet Ownership *(Oral Presentation)*

McGrath, Alysha (Psychology Major)

Faculty Research Mentor: Joan Piroch

Studies have revealed that pet owners have better overall physical health than non-owners. Little research has been conducted to examine the influence of pet ownership on individual's psychological health. Pet owners and non-owners were compared in this study to examine interpersonal trust and helping attitudes. T tests did not reveal predicted differences between owners and non-owners; however some gender differences were obtained. Results were discussed in terms of the benefits of pet ownership

Salivary Cortisol Levels of Paramedics with Controlled Static Work Schedules *(Oral Presentation)*

McQuarrie, Alison N. (Interdisciplinary Studies Major)

Faculty Research Mentor: Brandi Neal

Emergency calls requiring the services of a paramedic range in scope and severity, and the associated stress leads many to early burnout, depression, substance abuse and suicide. These outcomes are also symptoms of chronically high cortisol levels, the stress hormone. In comparing the cortisol levels of full time paramedics working 24 on/48 off shifts to those who work 24 on/72 off shifts, a life-saving correlation could be established.

Environmental Accounting: Catching companies who refuse to go green red-handed *(Poster Presentation)*

McGree, Wylee (Accounting Major)

Faculty Research Mentor: Sheila Mitchell

Environmental Accounting is a branch of accounting that is progressively gaining popularity and has the potential to redefine the standards of sustainability for companies. With integration of past proposals for a carbon tax and a cap and trade system, a new proposal could be formed that will be revolutionary for sustainability standards that could make an actual difference in the world.

Impact of Particles' Physical Attributes on Settling Velocities in Sediment Transport *(Poster Presentation)*

Mechant, Wilmont (Applied Physics Major) and Marek Jendrassak

Faculty Research Mentors: Var Limpasuvan, Roi Gurka and Erin Hackett

Sediment transport is a process in which fluid movement entrains solid particles, thereby moving them. In the deposition stage of sediment transport, particles reach a terminal or settling velocity, which is simulated experimentally by placing particles of various size and density into a water-filled tank. Recorded with a high-speed camera, images of the particles' descent are analyzed to compute the particles' settling velocities. Results reveal the sensitivity of settling velocities to particles' physical attributes.

Social Support and Fear of Negative Evaluation as a Function of Gender *(Oral Presentation)*

Merrill, Melissa (Psychology Major)

Faculty Research Mentor: Joan Piroch

This study was designed to examine perceived social support and fear of negative evaluation in men and women. Subjects were 147 Coastal Carolina University students who completed three inventories. Three hypotheses were proposed: women would report more fear of negative evaluation than men; men would have higher perceived social support scores than women and fear of negative evaluation and perceived social support would be negatively correlated. Statistical results supported only the third hypothesis.

An Evaluation of SNAP Nutrition Education Content in a South Carolina Community *(Poster Presentation)*

Munzo, Meliton Jr. (Health Care Administration Major)

Faculty Research Mentor: Fredanna A.D. M'Cormack

The Supplemental Nutrition Assistance Program (SNAP) makes food available to low income individuals. SNAP provides nutrition education to beneficiaries of the program; however, studies show that SNAP beneficiaries often purchase non-nutritious foods. This study examines the type and quality of nutrition education provided to SNAP beneficiaries. An evaluation of the content, distribution and usability of SNAP material will be conducted. SNAP materials will be reviewed and employees will be interviewed regarding the distribution of SNAP materials.

Help Me Help Your Diabetes *(Oral Presentation)*

Otten, Jessica L. (Exercise and Sport Science Major)

Faculty Research Mentor: Sharon Thompson

Diabetes is the seventh leading cause of death in the United States and leading cause of kidney disease and blindness. A survey with items on diabetics' knowledge and beliefs about their disease was created and distributed (n=32) over 24 days to patients who sought care at a free community health care clinic in a

Southeast Coastal area. The results will be entered into Excel and analyzed using frequencies, means, and t-tests. Results will be discussed.

The Quest for a Bacteriophage Lytic to *Staphylococcus aureus* and *Escherichia coli* (Poster Presentation)

Pride, Derek (Biology Major) and Riane Petersman

Faculty Research Mentor: Paul Richardson

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. Human participants 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 lytic phage would be isolated and classified using polymerase chain reaction (PCR) and gel electrophoresis.

The Discovery of Novel genes amplified during tail regeneration of *Anolis carolinensis* (Oral Presentation)

Ravancho, Danielle R. (Biology and Marine Science Major)

Faculty Research Mentor: Michelle Barthet

The mechanism of tail regeneration after amputation is examined in recently sequenced model organism, *Anolis carolinensis*, to determine the presence of novel genes during the regeneration period. The technique of differential display was utilized to discover such genes involved in the process. Identification of these genes may indicate some aspects of the regenerative mechanism in reptiles that may be attainable in mammals, namely humans.

Call a Vegetable a Vegetable: Perceptions and Taste Ratings (Oral Presentation)

Reeves, Janel (Biology and Exercise/Sports Science Major)

Faculty Research Mentor: Sharon Thompson

Research is mixed regarding how nutritional value of food can influence perceptions about taste, particularly among children. This study examined fifty-one elementary age children's perceptions of vegetable-enhanced snacks and milk substitutes prior to and after tasting. A paper-pencil survey was used which included a 3-point Likert-type scale. T-tests were analyzed to determine significant changes in perceptions of ratings. Results indicate consumption of vegetable enhanced foods or milk substitutes may be encouraged without deception.

Russian Democracy and the Civil Society behind its Flaws (Oral Presentation)

Rhodes, Anastasia N. (Political Science Major)

Faculty Research Mentor: Holley Tankersley

In an effort to add to the existing knowledge about the failed Russian democracy, I conduct a case study of Russian democracy based on six elements identified by Robert A. Dahl that are necessary for the successful modern democracy. I hypothesize that the lack of success of the democratization in Russia is a result of the Russian mentality of apathy and submission that is so deeply embedded in the foundation of the civil society.

Assessing Perceptions and Attitudes of an Extreme Sports Park in the Myrtle Beach Area (Oral Presentation)

Richard, Taylor (Marketing Major), Desiree Fair, Victoria Wilkins and Deandra Lipscomb

Faculty Research Mentor: Monica Fine

Action sports have been on the rise in the last decade with such events as the X-games. A new action sports park is in the works for the Myrtle Beach, South Carolina area. The park would include extreme sports such as surfing, wakeboarding, and skating. Specifically, the Grand Strand area is seeking a tourist attraction that would be sustainable during the shoulder and low seasons. The park will feature state of the art technologies that produce consistent waves for surfing 12 months a year. With over 10 million surfers worldwide this has been deemed an attractive target market for South Carolina's newest tourist attraction. The park will also offer a family waterpark, dining, shopping, and nightlife opportunities. The purpose of this study is to develop a literature review of the relevant studies related to the action park. Next, we use focus groups to

determine perceptions and attitudes of 8 to 12 people that fit our target market. Lastly, we will create a survey, distribute the survey, analyze and interpret the results.

Biomaterial Development for the Removal of Metal Contaminants in Water *(Poster Presentation)*

Ritter, Valoria, Lance Mcdanel and Green Jackson (Biochemistry Major)

Faculty Research Mentor: Rachel Whitaker

Drinkable water is a luxury for most of the world's population. Heavy metal contamination of drinking water is common and is becoming more of a problem as the world-wide pollution continues to rise and more countries become industrialized. The main sources of metal pollutants in the environment originate from industrial waste, fertilizers, battery waste, or electronic waste. Many industrial processing plants and waste management sites are often in close proximity to aquatic ecosystems, which increases the likelihood of metal pollutants contaminating natural water systems. To exacerbate the problem, metal ions are highly soluble in water, therefore they are difficult to detect by human sight. Furthermore, because they are very soluble they can be difficult to completely remove. Exposure to heavy metals can be harmful to human health and in high concentrations can lead to neurodegeneration and eventually death. Carbon-based filtration systems for water are often used in the industrialized world to remove metal contaminants from water, however recent scientific findings indicate that constant exposure to carbon debris from these filters may be harmful. Furthermore, these carbon-based filtration systems are often expensive and therefore are rarely used in the developing world. To address these water-quality concerns, our research focus aims to develop a novel biomaterial that would be biodegradable and allow for the efficient removal of metal ions from water. We believe that the proposed biomaterial is the first of its kind and may be a viable alternative to the current metal-removal methodologies. The biomaterial will be composed of RNA (ribonucleic acid) tethered to biodegradable filter paper.

Power Poses and Self-Esteem *(Oral Presentation)*

Roddrecia, Anthony (Psychology Major)

Faculty Research Mentor: Joan Piroch

A study was conducted to examine power poses and self-esteem. Thirty three students were assigned to one of three pose groups (high power, low power, control). Each participant maintained a standing pose for one minute. Then subjects completed a self-esteem survey. It was hypothesized that the high power pose group would have higher self-esteem. The results did not support the hypothesis. Perhaps power was not embodied by the subjects as a function of pose.

Embodiment: Dirty Hands versus Dirty Mouths *(Oral Presentation)*

Rodgers, Stephen (Psychology Major)

Faculty Research Mentor: Terry Pettijohn

The study that will be conducted will be looking at the embodiment of moral purity based on a "dirty mouth" which is a voicemail recording or "dirty hands" which is through typing an email. If primed unethically by hand via email the participant will be more willing to take home the sample size hand sanitizer and when primed unethically by mouth via voicemail the participant will be more willing to take home the sample size mouth wash. In addition, the selected product will be rated highly desirable and the mouth or hand category of products will be rated as more desirable depending on modality of the moral transgression. The first page in the testing packet I asked participants to fill out was a paragraph of interns in heavy competition at a law firm. Your colleague Chris lost a zoning document he needs to get the same promotion the participant is supposedly fighting for as well. If primed ethically in the paragraph you gave back the zoning document giving Chris the promotion. If primed unethically you found the document, deciding to throw it away giving yourself the promotion instead of Chris. The reason this research is being conducted is to see if after committing an unethical act if using a cleansing product eases your moral transgressions. If significant results are found this could help us understand why it could be easier for someone to lie about an unethical act if a cleansing product was used directly after. An example of this is if using vulgar language towards somebody of significance, if after using mouthwash it would make you feel better about it morally. If significant results are found after conducting the study in its entirety this could reflect on human behaviors and why we react the way we do.

Biking in Kind Environments: Study of Attitudes and Knowledge of Bicycle Safety *(Oral Presentation)*

Sanders, Dori (Exercise and Sports Science Major) and Chelsea Thomas

Faculty Research Mentor: Sharon Thompson

Research has shown that there is a greater need for bicycle safety and driver education in South Carolina due to an increase in the number of deaths over the past five years. The study was conducted in Horry County on those who reside in the area, as well as those who are visitors. An electronic version was accessible through city and business webpages. Results were analyzed using percentages, means, chi square and t-tests. Findings related to community member's attitudes and beliefs regarding bicycle safety will be discussed.

Digital Archiving of Black WWII Soldiers *(Oral Presentation)*

Sargent, Steven (History Major)

Faculty Research Mentor: Maggi Morehouse

Digital archiving is quickly becoming a staple in the methodology of historical research. Researchers are utilizing and developing new methodological skills with digital repositories. Digital archiving is still a work in progress; it is up to researchers and archivists to build this repository. This presentation will highlight my work with Dr. Morehouse and the Avery/Lowcountry Digital Library in the

Retrospective Review Comparing Crossed-screw and Locking Plate Fixation of Hallux Metatarsophalangeal Joint Arthrodesis *(Oral Presentation)*

Sarson, Michael G. (Biology Major)

Faculty Research Mentor: James Wright

Traditionally in the surgical management of patients suffering advanced disease of the metatarsal-phalangeal joints of the foot, crossed screws has been the gold standard. In recent years there has been a shift in orthopaedic surgery to the use of locking plates in the treatment of this disease with biomechanical fixation. The current study was undertaken to determine the most favorable outcome by comparing rate of nonunion, clinical result, operative/union time, and implant cost.

New applications of a Bronsted Acid Catalyzed Friedel-Crafts Reaction *(Poster Presentation)*

Segreto, John (Chemistry Major)

Faculty Research Mentor: Bryan Wakefield

We have demonstrated the utility of a new diphenylphosphoric acid catalyzed Friedel-Crafts reaction between indole and *N*-tethered allylic alcohols on a variety of substrates. To expand the scope of this reaction, two new substrates have been investigated. First, the use of allylic alcohols tethered to the 3-position of indole and second, *N*-tethered allylic alcohols on pyrrole. These reactions will show the generality of the reaction and provide access to new natural products.

The Globalization of Human Rights in Post-Genocide Rwanda *(Oral Presentation)*

Shine, Sadara (Political Science Major)

Faculty Research Mentor: Richard Aidoo

In the past two decades, Rwanda has been through major changes, from the conflict-ridden society with deep divisions between the two main ethnic groups – Hutus and Tutsis – to a case of impressive economic growth. In spite of the progress, deep divisions and human rights issues exist. To avoid the recurrence of any conflict, both state and non-state actors are playing varied roles in a post-genocide Rwanda. Based on both primary and secondary sources of information, this paper argues that in an era of globalization and post-genocide in Rwanda, non-state actors like international non-governmental organizations have the most impact in the preservation of human rights. So, in spite of the multiplicity of actors working to protect human life and property in Rwanda, and recovery from the effects of genocide, the character and mode of operation of these non-state actors put them ahead of other actors in the achievement of this goal.

Blame Attribution as a Function of Sexual Assault Victim Characteristics *(Oral Presentation)*

Simons, Ashleigh E. (Psychology Major)

Faculty Research Mentor: Linda J. Palm

Blame attribution was investigated as a function of intoxication status (intoxicated/not intoxicated) and clothing style (revealing/conservative) of a female sexual assault victim. Undergraduate students ($N = 248$) read a scenario and provided blame ratings for the victim and perpetrator. Factorial ANOVA results revealed

a significant main effect of intoxication status for the victim blame scores. No significant effects were indicated for perpetrator blame scores. Implications for reducing sexual assault victim stigmatization will be discussed.

Bioremediation of Aquatic Ecosystems using Engineered Laccases for the Degradation of Ethinylestradiol and Bisphenol-A *(Poster Presentation)*

Smith, Cody (Biology Major)

Faculty Research Mentor: Rachael Whitaker

Bioremediation of aquatic ecosystems is vital to maintain the health of our environment. Researchers have engineered organisms to metabolize anthropogenic pollutants with limited success. In contrast to adding foreign organisms to aquatic ecosystems, we believe that effective bioremediation can be accomplished by adding preparations of enzymes directly to water in sewage treatment plants, effluents from paper mills or to natural water systems. Researchers have identified the enzyme laccase from *Trametes versicolor* as a potential candidate for bioremediation. It has been shown that this laccase enzyme can oxidize natural estrogens, nonylphenol, bisphenol-A, polychlorinated biphenyl compounds (pcb) and many other cyclic anthropogenic pollutants. The success of using laccase to bind-to and oxidize cyclic anthropogenic pollutants is profound. The significant drawbacks of using laccase in bioremediation efforts have been that first, laccase's optimal pH is ~5.0, second, expression and purification of laccase in bulk has been difficult, and third, the temperature range of activity and stability of laccase is limited. We have devised a way through biotechnological breakthroughs to generate in bulk the laccase enzyme. From this point, we aim to evolve laccase to increase its environmental tolerances.

Characteristics and Effects of Muscular Dystrophy in Broiler Chickens *(Oral Presentation)*

Smith, Kayla (Biology Major)

Faculty Research Mentor: Michelle Barthet

Many cases of muscular dystrophy, caused by a point mutation in an exon of the WWP1 gene, have been seen in broilers, chickens raised specifically for meat production (Matsumoto et al. 2008). Many different phenotypes have been used to characterize muscular dystrophy in chickens. Some of these characteristics include an inability of the chicken to raise itself from a flat surface, drooping neck, and a poor appetite. We analyzed clutches of chicks from a local farm that displayed phenotypic characteristics of muscular dystrophy. DNA was extracted and a region of the WWP1 gene amplified and sequenced for comparison. We have identified a novel mutation in an intron region of WWP1 that may contribute to the muscular dystrophy phenotype. Matsumoto H., Maruse H., Inaba Y., Yoshizawa K., Sasazaki S., Fujiwara A., Masahide N., Nakamura A., Takeda S., Ichihara N., Kikuchi T., Mukai F., Mannen H. 2008. The ubiquitin ligase gene (WWP1) is responsible for the chicken muscular dystrophy. FEBS Letters. 582: 2212-2218.

Underdog Advantage on Creativity *(Oral Presentation)*

Smith, Kerry L. (Psychology Major)

Faculty Research Mentor: Jong Han Kim

Top dogs are favored but stories of successful underdogs from biblical David and Goliath to modern day Harry Potter are pervasive in our society. How can underdogs win over top dogs? After participants read an underdog or a top dog story, they completed Torrance Tests of Creative Thinking (TTCT, Torrance, 1968). Participants came up with more original ideas after reading an underdog story, giving them

Experience of Graduating Seniors Correlating with Difficulty of Landing a Job in Their Profession *(Oral Presentation)*

Stanley, Tahzeneka Stanley (Communication Major)

Faculty Research Mentor: K. Holody

With a chaotic economy and a devastating unemployment rate in America, it is hard for college graduates to find a job right out of college, making it hard for them to support themselves. I want to see if having a high GPA, job experience or good critical thinking skills give students a good chance of getting the job in their profession despite the economic storm. I would like to research the relationship between the work experience of students and the chances of a smooth or hard transition for them going into the workforce.

Augmented Reality and the Future of Technology *(Oral Presentation)*

Tavernier, Alexander (Art Studio Major)

Faculty Research Mentor: John Schiro

With the rapid advancement of modern technology, Augmented Reality is a concept that has recently show tremendous growth and promise for the future. A.R. encompasses any technology that modifies the real world with computer-generated input. My research over the past year has led me to explore potential uses of this new technology

Development of a DNA Fingerprinting Protocol for Differentiation between Bacteriophages in Aquatic Environments *(Poster Presentation)*

Thurn, Nicholas A. (Biochemistry Major) and Caitlyn Baker

Faculty Research Mentor: Paul E. Richardson

Bacteriophages show potential in limiting aquatic bacterial populations through their lytic properties. It is estimated that there are 10^4 - 2×10^7 viral particles per milliliter of seawater. Current molecular techniques based on genome size have suggested that viral communities from coastal waters contain thousands of genotypes and have only been able to detect viruses that make up around 1% of the total viral community. Currently, a protocol to differentiate bacteriophages by restriction fragment length pattern of DNA is being developed.

Investigating Maturase Evolution *(Poster Presentation)*

Trabolsky, Romi (Biology Major)

Faculty Research Mentor: Michelle Barthet

MatK is the only group II intron maturase encoded in the chloroplast genome of land plants. MatK is a rapidly-evolving protein and considered the "missing-link" in intron splicing evolution. No crystal structure exists for a group II intron maturase. The aim of our study is to clone and express MatK protein as a first step to generate a crystal structure for this important enzyme. A crystal structure for MatK may provide information on spliceosome evolution.

Survey Interpretation and Data Analysis of Coastal Cycles *(Oral Presentation)*

Troutman, Ina (Biochemistry Major)

Faculty Research Mentor: Sharon Thompson

Using alternative means of transportation can help reduce traffic, promote healthy lifestyles, and decrease negative environmental impacts. An online survey was distributed to all Coastal students in order to evaluate the Coastal Cycles program, to identify transportation use, and to increase awareness for improvements on campus. It was determined that only 35% used environmental friendly transportation. Also, safety concern was the number one reason students did not ride a bicycle, followed by a lack of sidewalks/trails.

Sex Determination of Bottlenose Dolphins from Dorsal Fin Photo-Analysis *(Oral Presentation)*

Wade, Jacob (Marine Science Major)

Faculty Research Mentor: Rob Young

Due to the bottlenose dolphins' (*Tursiops truncatus*) physiological characteristics and aquatic nature, it can be difficult to determine gender from field observations. Rowe and Dawson (2009) developed and tested methods for sex determination of dolphins in Australia using dorsal fin features, resulting in >90% accuracy. In this study, I will test their methods on a novel population, using dorsal fin images from South Carolina dolphins of known sex.

d-amino Acid Inhibitory Properties on *Staphylococcus aureus* and *Escherchia coli* Growth *(Poster Presentation)*

Wesel, Jordan (Biochemistry Major) and Ina Troutman

Faculty Research Mentor: Paul Richardson

The over prescription and misuse of antibiotics has resulted in antibiotic resistant strains of bacteria. In order to combat these evolved strains, the scientific community must develop new treatments. A potential new option is using D-amino acids as a bacteriostatic agent. D-amino acids are important components of bacterial cell walls, but are unusable for protein synthesis, where only the "l-" enantiomers are utilized. If D-amino acids were incorporated into the proteins, it would severely deform the protein and render it useless. The "d-

“conformation has the potential to slow and perhaps halt bacterial cell wall synthesis. Given this, the D-amino acids methionine, leucine, and phenylalanine, will be tested for potential inhibitory effects on the gram-negative bacteria *Escherichia Coli*, and the gram-positive bacteria *Staphylococcus aureus*.

Effect of Grape Seed Extract in Fruit Fly *Drosophila* Huntington’s Disease Model (*Oral Presentation*)

Willeford, Breanna (Biology Major), Sierra Willeford, and Duncan Perry

Faculty Research Mentors: Fang Ju Lin and Tianyi Wu

Huntington’s disease is a devastating neurodegenerative disorder, with deficits in cognitive and motor function. It has been reported that grape seed extract (GSE; 2.8 μg/ml) extends the lifespan of transgenic *Drosophila* carrying a mutant human huntington gene. In this study, we aim to develop a valid screening using *Drosophila* for potential compounds such as GSE that could slow down the progression of disease, as currently there is no cure for Huntington’s disease.