Poster Session 1

1. *A Comparative Genomics Approach to Understanding the Roles of P53 Binding Sites*
Nicole Pelletier, Adrian Acuna Higaki and Lei Zhou, University of Florida

Cancer is one of the leading causes of mortality worldwide, with over 8 million deaths per year. In more than 50% of cancers, the transcription factor P53 comes into play, serving as a tumor suppressor that exerts distinct anti-proliferative functions in response to a variety of oncogenic stressors. Through ChIP-Seq analysis, thousands of P53 binding sites in mammalian genomes have been previously identified, yet the functionality of these binding sites remains to be established. It is hypothesized that mutations or epigenetic silencing of non-coding regulatory sequences of P53 target genes play just as an important role in cancers as do the extensively studied coding regions of p53. By using Drosophila as a model organism, a comparative genomic approach to identify functional P53 binding sites and determine their roles in tumorigenesis is proposed. To do this, a library of significant P53 binding sites must first be established by looking at upregulated and downregulated genes obtained from RNA-seq and comparing them to our ChIP-Seq data. Next, CRISPR-Cas9 will be used to generate Drosophila models containing mutations in the P53 binding sites near the Drosophila pro-apoptotic genes Hid and Rpr. Selected adult flies containing the CRISPR-Cas9 induced mutations near the specific bindings sites will undergo irradiation induced DNA damage to assess their functional importance. By using this approach we will discover functional roles of non-coding regulatory regions in tumorigenesis and contribute to apoptosis inducing cancer therapies.

2. *Relation Between Parent Emotion Socialization and Attachment*
Aidimer Perez and Daniel Bagner, Florida International University

Parent emotion socialization such as emotion related talk is an important parenting tool that can ultimately improve child behavior and this same trend has been observed for warmth and sensitivity. While these both improve behavior, they are not the same entity and their relation to each other should be further assessed. In the current study, we examined the relation between parent emotion- related talk and warmth and sensitivity. We hypothesized that higher rates of parent emotion-related talk will be associated with higher levels of warmth and sensitivity. In order to examine this correlation, parent-child interaction videos of infant-led play sessions gathered by Dr. Daniel Bagner and Dr. Lorraine Bahrick will be analyzed and coded for parent emotion-related talk using the Parent Emotion-Related Talk Coding System. These sessions will be coded for warmth and sensitivity as well using the Early Parenting Coding Systems. While previous research has examined the effect of emotion socialization (e.g., mental-state talk, mind mindedness) and attachment (e.g., attachment style, warmth) on child behavior, to date, there is limited research examining the relation between emotion socialization and attachment. The possible findings of this study are important as they will shed light on how two significant aspects of parenting, emotion-related talk and warmth and sensitivity, are related to each other. If a strong positive correlation is found for example, a possible

application would be teaching emotion-related talk in order to foster warmth and sensitivity in parents.

3. *Exploring Messages About Interracial Families Within Children's Books*
Peace Adetula, Anne Bubriski-McKenzie and Elizabeth Grauerholz, University of Central Florida

Picture books can leave lasting impressions on a child. As children grow older, these books can shape their view of the world. They present morals of what is right and wrong, what is accepted—as well as what is the norm. Because of their impact, such books must include positive depictions of various members of society. The United States' population is diverse and biracial individuals make up a growing number of this populace. As numbers of multiracial individuals increase, books representing them must be incorporated into societal norms. As part of a DiVerse Families project, this study looks at how blended families are positively depicted within children's stories. Books selected for the study were found to illustrate interracial relationships in a supporting manner. Content analysis discussing blended family representations within children's books have been conducted. Preliminary results overwhelmingly feature Black-White interracial families with a Black mother and a White father. However, current research explains that Black-White coupling is the least common form of multiracial relationships (Wang 2012). Very few books featured an Asian or Latino/a parent despite Asian and Latinos being more likely to marry interracially than Blacks. Regarding racial messages, most books tend to reflect a racial consciousness perspective that highlights racial difference rather than a color-blind perspective that ignores racial differences altogether.

4. *Mapping Cedar Key Florida Salt Marsh Vegetation Communities in GIS*
Nicole Bales and Michael Slattery, University of Tampa

While the overall area of marsh in the state of Florida is measured and tracked, specific changes in the makeup of these marshes are not. Using a combination of aerial photography and ground verification, this project uses GIS to manually digitize and map the study area (Cedar Key, FL) to better quantify changes to Florida marshes. When examining aerial photographs, both in true color and infrared, different types of vegetation are identified then classified into one of five categories: upland, high marsh, low marsh, salt flat, or mangrove. Tidal creeks and ponds are also being digitized so they are not included and quantified as areas of vegetation. To save manpower, it then makes sense to characterize how each vegetation type appears in the aerial imagery for a standard method of digitization. After the initial digitization of the vegetative communities, field verification by ground-truthing, was completed by visiting the site and comparing digitized imagery to the current vegetation. Via this two-pronged method, we have been able to match the ground-truthed vegetative communities with specific aerial imagery traits; greatly increasing accuracy and speed of the digitization process. The goal of this project is to establish an effective mapping technique for Florida salt marshes that does not require as rigorous ground-truthing. These findings will be used as a baseline for the Florida Fish and Wildlife Conservation Commission so that future changes in vegetation can more effectively characterized from aerials alone.

5. *Feasts and Famine: Modern Misconceptions of the Ancient Roman Diet*
Zachary Logeson and Jennifer Rae, University of Florida

There is a popular misconception of the diet of poor Romans. This belief is that the diet of the poor was unvaried and unhealthy, consisting of mostly porridge, cereals, and bread. It exists throughout all modern popular culture, from books and articles to television shows and movies. This misconception is the result of a lack of archeological and osteological evidence of the poor's diet and the perceived dichotomy between the rich Romans and those who could not afford luxury. Without substantial archeological evidence, this misconception comes from literature. Food is a popular topic in Roman satire, but its use is often misunderstood. Rather than used as historical evidence, the food depicted in the satires should be read as symbolic of the character serving or consuming the food. The organic waste of a block of shops and apartments inhabited by poor Romans and the analysis of skeletons from Herculaneum suggest an alternative to the traditional assumption of the diet of poor Romans. The recent archeological findings suggest that the working-class Romans inhabiting the Bay of Naples were in fact much healthier than is commonly believed.

6. *Comparison of Brain Anatomy Based on Gender in Individuals with Trisomy 21*
Yaser Ahmad and John Starbuck, University of Central Florida

Down syndrome (DS), also referred to as trisomy 21 (Ts21), is a condition that originates from having three functional copies of human chromosome 21. Individuals with Ts21 exhibit a unique craniofacial phenotype including midface hypoplasia (underdeveloped upper jaw, cheekbone, and eye sockets). Our research objective is to understand the effect of sexual dimorphism on Ts21 brain morphology in children using MRI images provided by the Florida Hospital. Surprisingly, there are few brain imaging studies in children with DS, as most investigations focus on adults who develop Alzheimer's-like dementia during senescence. Thus, our study seeks to fill this void in the literature. To achieve this objective, we place 9 anatomical landmarks, which are biologically meaningful loci with precise anatomical definitions, at specific locations on brain MRIs of both male and female children. EDMA, a multivariate morphometric statistical method, was used to calculate inter-landmark linear distances between landmarks in both genders. Using Mann-Whitney statistical tests, these linear distances were compared between males and females to understand the differences in the way trisomy 21 expresses itself based on gender. Thus far, it was determined that 44% of landmark linear distance differences were either statistically significant or approached statistical significance between male and female MRI images. The most pronounced differences involved distances of height of the brain and distances that included anterior-most frontal lobe, lateral-most parietal lobe, and posterior-most occipital lobe landmark endpoints. These changes in anatomical structures of certain brain areas could help explain behavioral characteristics associated with Ts21 such as memory loss.

7. *The Metabolites Produced by Batrachochytrium dendrobatidis Alter Amphibian Development, but not Growth in the Absence of Infection*
Nichole Laggan and Taegan McMahon, University of Tampa

Amphibian decline poses a serious threat to global biodiversity and ecosystem stability. *Batrachochytrium dendrobatidis* (Bd), a pathogenic fungus, has contributed to the extirpation and extinction of hundreds of amphibian species worldwide. Bd causes chytridiomycosis and ultimately death in many adult amphibians, but it does not typically cause mortality in tadpoles. Non-lethal exposure to Bd or the metabolites Bd produces may have adverse effects on tadpole growth and development. In this experiment, Cuban tree frog (*Osteopilus septentrionalis*) tadpoles were exposed to one of three treatments (live Bd, Bd metabolites alone, or an artificial spring water (ASW) control; n = 31 tadpoles/treatment). Cuban tree frog adults were exposed to one of two treatments (Bd metabolites alone or ASW; n = 30 adults/treatment). Growth (for both life stages) and development (for the tadpole) were monitored weekly for a month (tadpoles, adults) and mortality was observed daily. Tadpoles exposed to Bd metabolites alone developed faster than those exposed to live Bd or ASW ($p < 0.001$). However, there was no difference in mortality, tadpole length or weight change between treatments ($\chi21=5.05$, $p=0.08$, $\chi21=1.28$, $p=0.53$ and $\chi21=1.67$, $p = 0.44$, respectively). There was no effect of treatment on adult growth or mortality ($\chi12=0.11$, $p=0.74$, $\chi12=0.05$, $p=0.83$, respectively). These results indicate that tadpoles developing in Bd contaminated water may be adversely affected during development even when they are not directly exposed to Bd, while adults are not impacted by Bd metabolites.

8. *Sex, Drugs, Violence, and Athletes Who "Cried for Help": Four Case Studies in Reputation Restoration*
Eric White and William Berry, Bethune Cookman University

This study investigated how news and entertainment media portrayed professional athletes and whether they are represented differently based on the sport they play, gender or ethnicity. A review of the literature showed that historically there has been disparity in the representation of male and female athletes, the amount of coverage, as well as the description of the sportsperson. Profiles of female athletes often focused on appearance while those of male athletes focused more on their ability and performance. Female athletes are often portrayed in overly sexualized images, as feminine role models, as passive rather than active, and in sports that are considered gender-appropriate. These types of portrayals can perpetuate gender bias and stereotypes, undermine the true athletic ability of female athletes, and give the audience the idea that male athletes are more important than female athletes. Using the case study methodology, this research assessed how Tiger Woods, Danica Patrick, Michael Phelps and Kobe Bryant were covered. Each athlete experienced personal problems that affected media coverage of their professional careers, resulting in unflattering headlines. Using crisis management theory and media framing theory, the study found that although the athletes slipped in recognition and support from fans, they managed to restore their reputations. The research also found that although race did not appear to be a factor, the athletes were held to a different standard because of their conferred status as role models.

9. *Faith-based Cognitive-Behavioral Intervention for Distressed African-American Dementia Caregivers: Treatment Fidelity Analysis*
Luis Andrade and Robert Glueckauf, Florida State University

Over 5 million Americans are living with Alzheimer's disease and closely related conditions. The prevalence of Alzheimer's disease and related dementia's are significantly higher in African Americans than non-Hispanic Whites, with African Americans two times more likely to have this syndrome of disorders than their white counter parts. Dementia care giving has been associated with adverse physical, mental, and emotional health, in particular depression. Barriers in sociocultural, economic, and religious culture have significantly hindered the progress of depression treatment in the African-American caregiver population. The African-American Alzheimer's Caregiver Training and Support 2 (ACTS 2) project, a telephone faith-based cognitive-behavioral intervention (CBI) was developed to address these shortcomings. A randomized trial of ACTS 2 (N=114) is currently in progress comparing the effects of telephone, faith-based CBI versus a three-month waiting list on changes in depression and health status in distressed African-American dementia caregivers. The ACTS 2 fidelity team assessed the treatment fidelity of the telephone based CBI by use of a session-specific checklist and percent agreement among the coding team of the key intervention elements performed in each CBI session. This project will provide statistics on overall facilitator performance in terms of successfully discussing anticipated core elements throughout the individual and group sessions.

10. *Generational Differences in Viewpoints*
Andrew Barak, AlexisMcCurry, Eric Levy and Monica Escaleras, Florida Atlantic University

In today's society, different age groups seem to think and behave differently. Generational differences have influenced many controversial opinions that are discussed today. These topics are debated not only through social media and in debate classes, but even in the Supreme Court. Not much research has been conducted on generational differences, but in the studies which have been conducted, it has been concluded that there are substantial differences that exist between generations. Also, in the limited amount of research that has been conducted, the sample was relatively small and concentrated in the same geological area, making the survey incomprehensive. In order to understand these differences and where the opinions of generations differ, we developed an online survey about people's opinions on controversial issues debated about in modern society. Our survey was consisted of 16 questions and was taken by 494 people across the United States, by people in several age groups. We found that there are statistically significant differences between age groups and their views on social issues such as religion, sex before marriage, same sex marriage, and abortion. Our results have shown that people are beginning to move away from the more traditional values and into more liberal viewpoints.

11. *Differential Degradation of DNA of Saliva Samples from Objects in Different Aqueous Conditions*

Allison Blethen and Sulekha Coticone, Florida Gulf Coast University

DNA evidence is used in forensic cases to assist in delineating conclusions in court for crime scene recreation and to ascertain the guilt or innocence of a suspect. The degradation of DNA is one of many challenges in obtaining useful samples for forensic analysis. It has been reported that DNA obtained from biological fluids may be viable indefinitely in controlled conditions. However, there are no forensic studies on how DNA degrades while submerged in different water types. In the present study, human saliva was collected and placed on a solid surface (e.g. marble) which was then submerged in different water types (distilled, lake, and ocean water). After incubation under controlled temperature and humidity conditions for 26 days, DNA was extracted and quantitated from the saliva samples. For each water type, the pH and chloride content was evaluated. The average degradations for the water types were determined to be 69.6% for ocean water, 60.6 % for lake water, and 54.1 % for distilled water. These results indicate that there is differential degradation of DNA in saliva samples when subjected to different water conditions. Further studies are being done to determine the quality of the DNA obtained, thereby assisting in the forensic DNA analysis.

12. *Neural Correlates of Tourette's Syndrome in Mu Oscillations of the Sensorimotor Cortex*

Olivia Bockler and Wen Li, Florida State University

Mu-frequency neural oscillations occur in the sensorimotor cortex, and are inhibitory in nature; motor activity desynchronizes neural firing, causing a decrease in mu power. In patients with Tourette’s syndrome (TS), a neurodevelopmental disorder characterized by involuntary motor and verbal tics, there is decreased behavioral inhibition. Tics, though irrepressible, feel volitional and are generally preceded by a premonitory urge. Recent developments in TS literature have implicated deficits in sensory gating as a possible mechanism through which premonitory urges arise. This study aims to establish neural correlates of TS by observing cortical oscillatory activity, while further elucidating the role these rhythmic neural networks play in the etiology of various neurodevelopmental disorders. Additionally, sensory gating will be assessed using a paired click task and the subsequent P50 event-related potential, thus allowing us to observe a correlation between sensory gating deficits and motor tic severity. Preliminary data suggest that patients with TS have lower peak mu power at baseline; however, while actively suppressing tics, mu power increases to levels typical of those at rest in healthy controls. After substantiating this neural correlate, future implications include directly manipulating mu oscillations by use of transcranial alternating current stimulation (tACS). Normalizing mu power through tACS may lead to a decrease in objective motor tics, and an increase in subjective feelings of tic control during and immediately following stimulation. This could pave the way for more targeted, less invasive treatments for TS.

13. *Go with the tide: Impact of high water on boring sponge establishment*
Sheridan Strang, Elizabeth Boggs, Ayssel Tanbari, Jesse Blount, Katie Adams, Iris Fang, and Linda Walters, University of Central Florida

Boring sponges are bioeroders that dissolve through calcium carbonate substrates, including oyster shells. Live sponges and broken oyster clusters showing boring sponge degradation have been observed on oyster reefs in Mosquito Lagoon. These sponges may erode the reef edges by weakening attachment points of oyster clusters. Clusters may wash up onto intertidal sections of reefs via wind or boat wakes. Mosquito Lagoon's high water season may allow dispersed sponge to persist on and degrade intertidal portions of reefs that are exposed daily throughout the rest of the year. We conducted aquarium experiments to quantify the length of time boring sponge takes to transfer between shells via physical contact and larval dispersal. Data suggests that the 3-month high water season may be sufficient time to allow sponge to infect oyster reefs. This adds to our understanding of why sponges are eroding oyster reefs and may inform dispersal-mitigation strategies for future restoration efforts.

14. *Distilled Ozone Source for Complex Oxide Growth Using Molecular Beam Epitaxy*
Dakota Brown and Maitri Warusawithana, University of North Florida

For the growth of complex oxides by depositing constituent elements, a source of oxygen is necessary. Given the ultra high vacuum environment that is used for film growth within the technique of molecular beam epitaxy (MBE), the oxygen source must be able to provide the required oxidation at low concentrations/partial pressures. As such it was determined to use ozone for our oxygen source since it is extremely reactive compared to oxygen. Distillation of ozone for this purpose was carried out by utilizing a high purity oxygen supply. This is accomplished by generating a small percentage of ozone using an electrical discharge and adsorbing this generated ozone on porous silica. The silica is placed inside a double wall glass still that is kept in a bath of liquid nitrogen. By adjusting the liquid nitrogen level and circulating a controlled flow of dry nitrogen gas between the walls of the still, the still temperature is carefully controlled and is kept above -111 oC (the boiling point of ozone) and far above -183 oC (the boiling point of oxygen). This allows for selectively adsorbing the ozone over oxygen. The ozone distilled in this manner is differentially pumped and a beam of ozone is supplied into the chamber via a piezo electric leak valve. Throughout this process a computer program is used to carefully manipulate the liquid nitrogen level as well as the dry nitrogen flow rate to keep the pressure in the differentially pumped ozone line at around 3.5 Torr.

15. *Airport Emission Rates from Airborne Measurements of NO_x and CO_2*
Dallas Burke, University of North Florida and Sally Pusede, University of Virginia

Landing and takeoff operations at the Los Angeles International Airport (LAX) emit gaseous pollutants and particulate matter that are harmful to the environment and human health. Each year since 2012, the NASA Student Airborne Research Program has conducted airborne missed approaches at LAX and other airports in the Los Angeles Basin, while making in-situ measurements of carbon dioxide (CO2) and the oxides of nitrogen (NOx) using instruments onboard the aircraft. The CO2 was measured via the NASA Goddard Greenhouse Gas suite, and the NOx was measured with a chemiluminescence-based instrument from the University of Virginia. We show that observationally derived NOx emission indices (grams of NOx emitted per kilogram of jet fuel consumed) from individual emission plumes sampled at low altitude along the LAX runway are consistent with the values for the expected aircraft engine type and mode that are listed in the ICAO Aircraft Engine Emissions Databank. Additionally, the vertical profiles from fifteen missed approaches are used to develop a method for a novel top-down estimation of the total airport emission rate (tons of CO2 emitted per hour). The measured top-down airport emission rates for LAX are compared to the traditional bottom-up emission rates estimations. Finally, the top-down model is used to predict the airport emission rates for major airports at peak hours throughout the United States.

16. *Sequence Selectivity, Cooperativity, and Competition in The Equilibrium Binding of Psoralen Crosslinking Agents To DNA*
Giselle Valdes and Stephen Winkle, Florida International University

Sequence Selectivity, Cooperativity, and Competition in the Equilibrium Binding of Psoralen Crosslinking Agents to DNA Psoralens, such as 8-methoxypsoralen, show sequence preference in their photo crosslinking of DNA for TA steps. This UV-induced covalent binding to DNA is preceded by intercalative equilibrium binding. Previously, we have examined the equilibrium binding of intercalators and groove binders using restriction enzyme activity assays. Here, we report results for restriction enzyme activity assays of the binding of 8-methoxypsoralen [8-mop] to phiX174 RF DNA [psoralen/DNA base pair from 5.6 – 23]. Eight restriction enzymes possessing differing cleavage sites and differing flanking sequences were employed. The results indicated that binding to flanking sequences affects enzyme activity. For example, 8-mop causes inhibition of BSSH II [cleavage site GCGCGC], suggesting binding at the cleavage site. With Mlu I [ACGCGT], enhancement of cleavage was observed, suggesting binding near the enzyme reaction site and possible alteration of the DNA structure by 8-mop binding. Previously we examined selectivity in the binding of DB75, a groove binder [provide by D.W Boykin and W.D. Wilson, Georgia State University]. The presence of DB75 alters the reactivity of 8-mop near restriction enzyme cleavage sites suggesting possible competition or cooperativity between the two agents. For example, DB75 and 8-mop both enhance the inhibition of the other at the Dra I site [TTTAAA]. The studies with combinations of DB75 and either 5-mop or 8-mop provide insight into the activity of these agents separately.

17. *Expanding ExploreIT: Creating A Smartphone App to Engage Visitors At A Children's Museum*

Claudia Caban, Dominique Coppola, Stephen Blessing and Jeffery Skowrone, University of Tampa

Research has shown that the use of adaptive and intelligent tutors in classroom settings has positive effects on learning. Blessing, Skowronek, and Quintana (2013) investigated their use in an informal setting, the Glazer Children's Museum in Tampa, Florida. They created ExploreIT, a dedicated iPad application that provided parents activity suggestions to do with their children, and quizzed the children on what they learned. They found that museum goers enjoyed using the iPad app, which lead them to stay longer at the museum and remember more about their visit. In the current phase of the project, we expanded the ExploreIT app to be a web-based application, offering more activities and available to any visitor to the museum. The experiment discussed here relates the initial results of this new website, capturing data from museum patrons to ensure that this expanded version lost nothing in terms of its effects as we moved the platform from a dedicated iPad app to a more general web-based application. Results demonstrated that patrons reacted as positively to the website as the original version. Encouraged by these initial results, we now plan to expand the website's use among museum goers and do a large-scale, summative assessment of how the website affects visitor's engagement with the museum and their memory of their visit.

18. *BLAST Analysis of New Plant Species*

Marco Cardone, Marco Antonio, Justin Santiago and Nalini Odapalli, Valencia College

Molecular Biology Research Valencia College, West Campus Research Assistant: Justin Santiago Professor: Nalini Odapalli Blast Analysis of New Plant Species DNA barcoding is a way to identify and discover species of different organisms. The purpose of this experiment is to catalog and discover the species that live and coexist in our biome and, find the relationship between them and other plants around. This is possible because after extracting the DNA from the samples, the DNA is compared with millions of other sequences in a data bank showing the likelihood of being related with other plants that were already catalogued. The research has three steps. First is to go outside and search for plants that look interesting and different. Second step is the extraction and isolation of the DNA from the samples collected on the field. This process requires time, special chemicals and machine like PCR thermocycler. Third step is to use the DNA coding to match possible organisms with similar or equal DNA structure. After we get the results the goal is to compare our samples with others on the DNA subway data base and with that, have a better understanding of what were our plants and how their genetic trees affected the environment. Marco Antonio Rocco Cardone

19. *Dialogic Reading with Adolescent Mothers*

Diana Abarca, Rachel Wolfkill and Jacqueline Towson, University of Central Florida

Teenage pregnancy is a prevalent issue that relates to multi-generational risk factors including school drop-out and living in low socioeconomic environments. Effects of pregnancy on adolescent girls and their babies are widely documented and include negative impacts on educational attainments of teenage mothers and cognitive and language development of their children. Research shows that teenage mothers respond well to preventative support services when employed in school curriculums, however there is limited evidence for interventions that facilitate interactions between adolescent mothers and their children. The proposed study assessed the teachability of dialogic reading (DR), an evidence-based practice linked to improved language and literacy skills in young children, to adolescent mothers. A single case multiple baseline across behaviors research design was implemented to measure the impact of the DR intervention on the mothers' reading behaviors and effects on their children's language skills. Exploratory data was collected to investigate potential effects of DR on adolescent mothers' self-efficacy and reading achievement. Data on the children's language and vocabulary was also collected through weekly vocabulary tests and language assessments. It was hypothesized that the mothers will increase in use of DR behaviors and self-efficacy of literacy skills. Statistically significant effects on reading achievement are not expected due to the small sample size. Changes on the children's book-specific vocabulary are expected as a result of the intervention. Because data collection will not be completed for this conference, preliminary results will be presented.

20. *Antimicrobial Effects of Selected Plant Oils Against Ampicillin Resistant <u>Escherichia coli</u>*

Nila Cousar and Sofronio Agustin, Seminole State College of Florida

Antibiotics has been beneficial to human society through several decades of use for treating bacterial diseases. However, it has been observed that some antibiotics have become ineffective due to the emergence of antibiotic resistance in pathogenic bacteria. There is urgency in searching alternate methods of treating these diseases. One approach is to use herbal products such as plant oils against these resistant bacteria. This pilot study is designed to determine the antimicrobial effects of selected plant oils extracts from the oregano, peppermint, lavender, and tea tree plants. The strain of *Escherichia coli* (EC-Amp^r) used in the experiment was transformed via insertion of a plasmid bearing Ampicillin resistance gene. The original strain of *E. coli* (EC-Amp^s) is susceptible to Ampicillin. A modified agar well diffusion technique will be used and zones of inhibition will be compared between EC-Amp^s and EC-Amp^r. Our null hypothesis is formulated around the idea that there is no significant differences in the effects of these selected plant oils against EC-Amp^s and EC-Amp^r. Findings from this pilot study may warrant further research of plant oils against other antibiotic-resistant bacteria.

21. *Developing a Cure for a Crisis: The Preliminary Identification of an Antibiotic Producing Pseudoalteromonas Species*
Rissa Edilla and Eric Warrick, State College of Florida, Manatee-Sarasota

There is a health crisis in the world today: the Center for Disease Control reported that 23,000 people died in 2013 as a result of drug resistant bacterial infections. The Small World Initiative, developed by Yale University, is working toward solving this crisis through the crowd sourcing of information. They developed protocols for undergraduate researchers to follow which allows them to discover antibiotic producing bacteria from their local environment. The Gulf of Mexico is a diverse ecosystem with an abundance of microbial life that is still widely undiscovered. This research was conducted in Bradenton Florida, which has beaches bordering the Gulf of Mexico. I collected a sample from a salt flat, and a sample from a mangrove swamp on Leffis Key, Bradenton Beach. Six of the colonies showed antimicrobial activity against *Staphylococcus epidermidis*. Two of those six colonies had a successful chemical extraction against *S. epidermidis* using a mid-polar solvent, ethyl acetate. PCR of the *16S rRNA* gene was performed to attempt identification to the genus level. The results of sequencing have determined these samples are most closely related to the Pseudoalteromonas family. Future plans include testing my antibiotic producers against other bacteria, biochemical characterization, and chemical extractions using solvents of varying polarities.

22. *On Fire or Burned Out? Self-Monitoring, Job Exhaustion, and Job Disengagement*
Elizabeth Ellis and Christopher Leone, University of North Florida

Workplace burnout (i.e., exhaustion, disengagement) produces turnover which, in turn, increases costs (personnel recruitment, selection, and training) for businesses (Maslach, Schaufeli, & Leiter, 2001). Job demands predict workplace exhaustion whereas job resources predict workplace disengagement (Demerouti et al., 2001). These demand-exhaustion and resource-disengagement relationships may be moderated by stable differences in responsiveness to intra-psychic versus interpersonal influences (i.e., self-monitoring; Fuglestad & Snyder, 2010). High self-monitors experience more workplace mobility and therefore may experience less burnout than low self-monitors (Kilduff & Day, 1994). Using Amazon' s Mechanical Turk Participants System (MTurk), we will recruit 125 men and 125 women from large companies (i.e., 100 or more employees). To assess convergent validity, participants will complete two measures of self-monitoring (Lennox & Wolfe, 1974); Snyder, 1974) and two measures of burnout (Kristensen, Borritz, Villadsen, & Christensen, 2005; Maslach et al., 2001). Potential mediating variables (e.g., role conflict, perceived workplace fairness) will also be assessed (Rizzo, House, & Lirtzman, 1970; Tsui, Pearce, & Tripoli, 1995; Netemeyer, Boles, & McMurrian, 1996). Moderation will be assessed using several multiple regression analyses with self-monitoring and either job demands or job resources as predictor variables and workplace exhaustion and workplace disengagement as criterion variables (Cohen, Cohen, West, & Aiken, 2013). Mediation will be assessed by including measures of role conflict, perceived workplace fairness, and work-family conflict as covariates in the

aforementioned regression analyses (Hayes, 2015). Our anticipated findings will be a theoretical and empirical addition to the literature on self-monitoring and the workplace (Day & Schleicher, 2006).

23. *Do Sitcom's Representations of Parents Really Portray a Modern Family?*
Eyal Cohen and Jelena Petrovic, Stetson University

This rhetorical study conducts a textual analysis of popular TV sitcom – Modern Family – in an attempt to identify how media constructs and represents parental roles within the family. Over the last 50 years, the media has created binary stereotypes for the roles of the mother and the father in the family. Even though significant progress has been made as far as gender equality goes, this study is concerned with notions of difference which still exist in media products today. Therefore, this study utilizes Todorov's structural analysis of narrative to look at the first 10 episodes of the sitcom. The study examines each episode's disruption and resolution; as well as the characterization of the three sets of parents in the show. The study looks to see how the show uses stereotypical roles which are ascribed by gender to bring the family life to a state of equilibrium. According to the findings in the study, the show encodes a message which creates clear and different archetypal roles between each set of parents. All parents have some sort of similarities between them, however the male and female characters were able to be distinguished as the "juvenile/tough love/breadwinning father," and the "caring/nurturing/stay-at-home mother." This rhetoric is aligned with several studies on the issue, and continues a message of a need of two separate parental roles for the existence of a properly successful – modern family.

24. *Total and Regional Bone Mineral Density (BMD) Is Associated with Higher Lean Mass Among Postmenopausal African American Women*
Ronika Etienne and Jasminka Ilich-Ernst, Florida State University

Obesity is prevalent among African Americans. Obesitydetermined by body mass index (BMI) may be an indication of adiposity, and might influence bone health. In addition, osteoporosis tends to be more common among women, especially after menopause. Dairy intake is one dietary variable known to influence body composition and bone health. Our objective is to investigate the correlation of bone health and body composition while taking into consideration calcium consumption among African American (AA) women who are postmenopausal. The participants (n=54) were recruited in North Florida and had an average age of 63.4±8.0 years old (mean± standard deviation). Also, participants had an average body mass index (BMI) of 33.8±7.5. Approximately 27.8% of the participants were classified as overweight (BMI≥25 kg/m2) and 63.0% were obese (BMI≥30 kg/m2). Using surveys, we have collected information about the demographics and calcium intake. The Dual-energy X-ray absorptiometry (iDXA) have been used to investigate body composition and bone health. Data were analyzed with SPSS using Pearson correlations. Total BMD (g/cm2) (β=0.523; $p<0.05$), Spine BMD (L1-L4) (β=0.530; $p<0.05$), Right Femur Neck BMD (g/cm2) (β=0.410; $p<0.05$), Right Total Femur BMD (g/cm2) (β=0.591; $p<0.05$), and Left Femur Neck (g/cm2) (β=0.494; $p<0.05$) was associated with

total lean mass (kg) with iDXA. Calcium consumption (mg/day) has been determined to be positively and significantly associated with Spine BMD (L1-L4) (β=0.311; $p<0.05$).

25. *Investigation of Dissolved Metals Concentrations in Lake Worth Lagoon*
Gino Garlaschi and Tara Root, Florida Atlantic University

Lake Worth Lagoon (LWL) is an urban estuary located in Palm Beach County, FL that is affected by anthropogenic activity. This project's goal is to investigate dissolved metal concentrations throughout the lagoon. Objectives include discovering correlations between metal concentrations and: salinity/conductivity, tidal cycles, rainfall, temporal variations, canal stage height and canal discharge. Every two weeks, water samples were collected throughout the lagoon and analyzed in the FAU Water Analysis Lab in Davie, FL. Metal concentrations are determined in the lab using an Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES). In the field, pH, salinity/conductivity, dissolved oxygen, and temperature are measured on site. We also collected stable water isotope data and are investigating whether those data will shed light on water circulation in the canal and thereby help explain the distribution of metals concentrations. Preliminary results show metal concentrations, specifically Arsenic and Copper concentrations, have increased from previously data present in SFWMD data base in 2007-08. Sample sites just north and south of canals show some relationship with the rainfall amount and drainage from canals into LWL during intense periods of rainfall. Therefore, we are looking deeper into the data to find a any clear relationships. Data collection took take place from June 2016 through May 2017 to obtain a full year's worth of data. The year-long data set will shed light on the magnitude, distribution and transport of metals throughout the lagoon.

26. *Mosquito Takeoff Strategies from Horizontal Surfaces*
Grace Clayton and Andrew Dickerson, University of Central Florida

On roughened surfaces, such as those equivalent to the roughness of skin, male and female *Aedes aegypti* mosquitoes employ a takeoff strategy similar to those witnessed in other Diptera; they initiate their takeoff with a push from mid- and hind-legs. Such a twitch of the legs lasting 13.9 ms allows tarsi to remain static until the legs reach maximum extent and are drawn inward as the body rises at 0.252 mm/s under flapping. In contrast, polished surfaces provide little traction to the mosquito pushing with its legs, inducing tarsal slip and decreasing the efficacy of the push. Instead, the vast majority of mosquitoes prefer initiating takeoff from polished surface with a leg strike, in which one or both hind-legs are raised into the air before swinging downward like a golfer's swing and striking the ground at 0.55 m/s. The ensuing reaction force lifts the mosquitoes body skyward at 0.525 m/s and full flapping commences. We hypothesize mosquitoes select the particular strategy which imparts greater performance by way of maximum stability or efficiency during the first critical wingbeats of flight. We characterize the takeoff kinematics of mosquitoes launching unprovoked from polished and roughened horizontal surfaces using high-speed videography, and rationalize the shift in their takeoff strategy through kinetic considerations.

27. *A Classification of Suicidality Disorder Phenotypes*
Jennifer Giddens and Dr. David Sheehan, University of South Florida

To provide a classification of suicidality disorder phenotypes. The view that suicidality is trans-nosological and that all forms of suicide are the same, is not consistent with response to pharmacological treatment evidence. For example, antidepressants make suicidality better in some patients, worse in others, and are no better than placebo for a third group. This suggests that there may be more than one type of suicidality. We used a phenomenological approach by observing in detail and directly communicating with subjects over time about their suicidality. We developed diagnostic criteria and a related structured diagnostic interview for 12 distinct suicidality disorder phenotypes. 1) Impulse Attack Suicidality Disorders, 2) Homicidal Suicidality Disorders, 3) Psychotic Suicidality Disorders, 4) Obsessive Compulsive Suicidality Disorders, 5) PTSD Suicidality Disorders, 6) Eating Disorder / Malabsorption Suicidality Disorders, 7) Substance Induced Suicidality Disorders, 8) Medical Illness / Neurological Condition Induced Suicidality Disorders, 9) Anxiety Disorder Induced Suicidality Disorders, 10) Mood Disorder Induced Suicidality Disorders, 11) Life Event Induced Suicidality Disorders, and 12) Suicidality Disorders, Not Elsewhere Classified. Among these phenotypes the description of Impulse Attack Suicidality Disorder is new. This disorder is associated with unexpected, unprovoked, unpredictable attacks of an urgent need to kill oneself. Conclusion: We offer 12 suicidality disorder phenotypes. Because these phenotypes may have a different response to treatment, each phenotype should be investigated separately when investigating anti-suicidality treatments and when investigating the relationship between genetic and other biomarkers in suicidality.

28. *Development of A Luminescent Europium(III) Complex for Anion Sensor Applications*
Sara Polzin and Eric Werner, University of Tampa

As biomedical sensor applications advance, luminescent lanthanide (Ln) complexes possess unique photophysical properties that may render them advantageous over traditional organic agents. In the context of anion sensing in aqueous solution, the anions may displace quenching water molecules bound to a chelated lanthanide ion leading to enhanced metal-derived luminescence. We report here a tripodal, TREN-capped pyridine/imine ligand as well as select Ln(III) complexes to probe their emissive and anion binding properties . The ligand was characterized by NMR, FT-IR, and elemental analysis, and metal complexes were characterized in the solid-state by FT-IR and in solution by fluorimetry. To further investigate the coordination chemistry of this ligand system, luminescence lifetime values of the Eu(III) complex were used to determine the number of bound solvent molecules in solution. In methanol, this bound solvent value was found to depend on the specific Eu(III) salt used in preparing the complex; the nitrate salt resulted in a smaller value than the chloride salt. Finally, the luminescence properties were examined in the presence of biological anions including fluoride, oxalate, citrate, carbonate, phosphate, and cyanide, to assess the potential of the complex as an anion sensor. Europium(III) emission was enhanced in the presence of oxalate, indicating a significant binding interaction between the metal center and this anion. Despite their

known binding affinities for Ln(III) ions, no major interactions were observed for fluoride, citrate or carbonate.

29. *Creation and Analysis of Clinically Tested Hydrogels for the Purpose of Electrosurgery*
Alfredo Gonzalez and Juan Aceros, University of North Florida

Electrosurgery has been around for years but just recently gained acceptance in modern medicine. Accidents are frequent when undergoing electrosurgery, and are usually a result of an untrained user. Hence, a valid method for user training is needed to minimize thermal and electrical injuries. The following study considers the possibility of using hydrogels as a material that surgeons can use to practice on. Here various ingredients are used to make material mixtures aimed at electrically and mechanically mimicking human tissue. These hydrogels were electrically characterized for a range of typical operating frequencies and dissected -by a surgeon- using a Valleylab Force 2 ESU system. The materials fabricated in this study presented positive preliminary results. Further investigation is needed fine tune the material's properties as part of a robust fabrication process.

30. *Engineering Zinc Finger Proteins to Block Transcription of Disease-Causing DNA Repeat Expansions*
Maja Haerle and Andy Berglund, University of Florida

Amyotrophic lateral sclerosis (ALS) and myotonic dystrophy (DM) are neuromuscular disorders caused by tandem repeat expansions in DNA. After transcription, repeat expansions of (GGGGCC)n and (CTG)n in DNA for ALS and DM, respectively, produce repeat-containing RNA that gain several toxic functions including protein sequestration and aberrant translation to form aggregating peptide repeats. Through the design and implementation of selective DNA binding proteins, we hope to achieve a transcription "blockade" to prevent the production of toxic repeat-containing RNA. The zinc-finger (ZF) protein is one of the most common DNA binding molecules. Our aim is to engineer zinc finger proteins that will specifically recognize, bind and repress transcription of (GGGGCC)n and (CTG)n repeats. Using online bioinformatics software, DNA sequences coding for the ZF domains predicted to bind to the repeats of interest were identified. This DNA was cloned into bacterial expression vectors for protein production. Protein was induced and subsequently purified from bacterial cells. Initial electrophoretic mobility shift assay (EMSA) results for the purified G4C2-ZF show successful and selective binding to G4C2 repeats in DNA. Additionally, in vitro transcription assay results for the purified CTG-ZF show that normalized expression of a CTG repeat expansion was selectively blocked by at least 55%. We will continue to optimize ZF protein production for large-scale purification. After optimization of ZF protein production, we will test direct delivery of engineered ZF proteins into ALS and DM cell models. Targeting RNA toxicity in ALS and DM using engineered ZF proteins provides a novel therapeutic strategy to explore.

31. *Investigating the Specificity of the Polyamine Transport System*
Michael Dieffenbach and Laurence Von Kalm, University of Central Florida

Polyamines are a class of essential nutrients involved in many basic cellular processes such as gene expression, cell proliferation, and apoptosis. Without polyamines, cell growth is delayed or halted. Cancerous cells require an abundance of polyamines through a combination of synthesis and transport from the extracellular environment. An FDA-approved drug, D,L-α-difluoromethylornithine (DFMO), blocks polyamine synthesis, but is ineffective at inhibiting cell growth due to polyamine transport. Thus there is a need to develop drugs that inhibit polyamine transport to use in combination with DFMO. Surprisingly, little is known about the polyamine transport in humans and other eukaryotes. Understanding the transport system would allow us to identify compounds that inhibit polyamine transport. To better characterize this system, we are investigating the effects of a toxic polyamine analogue called norspermidine on Drosophila. Our experiments have demonstrated significant differences in norspermidine uptake and toxicity between C. elegans and Drosophila which may imply a secondary polyamine transport system in higher eukaryotes. We are now testing whether normal physiological polyamines can compete with norspermidine for access to cells via the same pathway. This will provide novel information about the specificity of the polyamine transport system and may facilitate the development of more effective cancer medications that target this system.

32. *Working Memory: Determining the Relevant from the Irrelevant*
Nicole Heim and Derek Nee, Florida State University

While long-term and short-term memory are fairly well understood, working memory remains an enigma and not much is known about the process. The research to be conducted is concerned with the different regions of the brain and which regions are involved with the process of working memory. The research has not yet been completed, however the paradigm has been created that has a verbal and spatial working memory task occurring simultaneously. The spatial task has participants remembering a pattern and the verbal task has participants determining if letters are appearing in the correct order to spell a specific word. The first participants will be run in the upcoming months and in the future, participants will also be tested with TMS. The paradigm will then be further altered to include distracting stimuli, such as an interruption to either the spatial or verbal task, in order to determine when the stimuli will have the maximum effect on interrupting working memory. From this, it will be able to be better determined which regions of the brain are involved in working memory and additionally how the mind is able to select relevant from irrelevant information in working memory.

33. *Dopamine Increases in the Prefrontal Cortex, but not Nucleus Accumbens, Responsible for EEG Activity Caused by Hallucinogenic Drugs MDPV ('bath salts'), MK-801 and Ketamine.*

Marcillin Zetrenne, Giselle Shim and Tao Rui, Florida Atlantic University

3,4-Methylenedioxypyrovalerone (MDPV) is one of main ingredients in bath salts abused in the US. MDPV causes hallucination that would hurt the users themselves, but also police, healthcare personnel and even bystanders. Hallucination can also occur in schizophrenic patients with the positive symptoms. Dopamine (DA) is known to be responsible for the schizophrenic disorder. In mammalian brain, DA is found in many areas including the prefrontal cortex (FCx) and nucleus accumbens (NAcc). However, little is known about difference between accumbal and cortical DA in the involvement of hallucinations. The goal of the present studies was to characterize DA release in those two areas and then determine a relationship between DA and hallucinogenic activity. Experiments were carried out on male Sprague-dawley rats. DA was determined with brain microdialysis while hallucination was estimated by measuring EEG on rat skull surfaces with an ADinstruments. Schizophrenic behavior was induced in rats by administration of MK-801 and ketamine. We found that MDPV (0.25, 1 and 2 mg/kg, i.p.) evoked a dose-dependent increase in both cortical and accumbal DA. Interestingly, increases in DA caused by MK-801 (0.05, 0.1, and 0.5 mg/kg) or ketamine (5, 15, and 25 mg/kg) were mainly in the FCx, slightly in the NAcc. In contrast, all three drugs were able to elicit EEG activity. Our studies suggest that increases in cortical DA may be responsible for drug hallucination caused by MDPV, MK-801 and ketamine.

34. *Testing the Expanded Sport Official's Decision-Making Model*

Payton Howarth and Jason Ritchie, Florida State University

Sport officials represent a 'third team' in sports that have the potential to change the outcome of games, seasons, and careers. The existing research on officials is sparse and disjointed with many studies going uncited as their researchers abandon officiating research. The present study tests the Enhanced Sport Official's Decision-Making Model (ESODMM), which expands the existing Official's Specific Decision-Making Model by integrating additional variables that influence decision-making, particularly anticipation and emotion (Plessner & Haar, 2006). To test the role of anticipation and emotion in the ESODMM, 56 basketball officials (32 high school level, 24 NCAA division 1) were assigned to either high (crowd noise) or low (no crowd noise) stress conditions and asked to make calls on occluded or non-occluded basketball video clips. Results revealed that officials in the high stress condition experienced more stress and anxiety resulting in less accurate decisions and goal-directed gaze behaviors. Additionally, experienced officials made more accurate decisions and goal-directed gaze behaviors than novices. Moreover, decision-making accuracy was lowest in the non-occluded block. Finally, experienced officials' emotions were affected similarly by the high stress condition while maintaining their decision-making advantage. These results support that emotion, information-processing, and anticipation have an important role in officials' decision-making. Implementing the ESODMM will provide researchers with a more comprehensive model to guide their understanding of officials' decision-making.

35. *Identification and Characterization of Calcium Binding and Coiled Coil Domain 1 (Calcoco1) In Skeletal Muscle*

Parker Irvin, Kelsey Patterson and David Waddell, University of North Florida

Skeletal muscle atrophy results from a range of physiological conditions, including aging, cancer, disuse, and denervation. To elucidate the molecular genetic events of atrophy, skeletal muscle was isolated from mice 3 and 14 days of post-denervation. The gene expression profile of the denervated muscle was analyzed by microarray and compared to control muscle to identify novel atrophy-induced genes. The microarray revealed that Calcoco1 is expressed in skeletal muscle and is induced in response to denervation. To confirm that Calcoco1 is expressed in muscle, quantitative PCR (qPCR) was used to assess Calcoco1 expression in proliferating and differentiated muscle cells. The qPCR results demonstrate that Calcoco1 expression is modest in proliferating myoblasts, but increases significantly in differentiated myotubes. Western Blot analysis of muscle cell homogenates confirmed that Calcoco1 is expressed at the protein level in proliferating myoblasts and differentiated myotubes. To better characterize the transcriptional regulation of Calcoco1, fragments of the promoter located upstream of the start of transcription were fused with a reporter gene. The reporter plasmids were transfected into C2C12 mouse muscle cells in combination with myogenic regulatory factor (MRF) expression plasmids, which resulted in significant activation of reporter gene activity. Finally, to determine the sub-cellular localization of Calcoco1, the cDNA was fused with the green fluorescent protein (GFP), expressed in muscle cells, and visualized by confocal microscopy revealing that Calcoco1 is localized to the cytoplasm in myoblast cells. The observation that Calcoco1 is induced during neurogenic atrophy helps further our understanding of the molecular genetic events of muscle atrophy.

36. *Choice Architecture: The Application and Ethical Considerations of Nudging and Libertarian Paternalism*

Valerie Joly Chock and Jonathan Matheson, University of North Florida

"Nudging" is the idea that people's behavior can be directed through choice architecture (the design of the ways in which choices are presented). In the current literature, a lot of attention has been placed on the moral permissibility of nudging as a whole. In my research, I accept the claim that nudging is unavoidable (i.e. that the anti-nudging position is a non-starter) and aim to abandon the question of whether nudging is permissible to turn to more constructive questions regarding the ways in which it is morally defensible to nudge. In order to do so, I consider empirical discoveries from behavioral and cognitive science, which raise debates about the rationality of many judgments that people make in various decision-making contexts. My argument is aligned to those of Libertarian Paternalism, which propose that such findings should be used to help people overcome cognitive biases by organizing choices in ways that lead people to make better decisions with the help of "nudges"—approaches that steer people in certain directions while fully maintaining freedom of choice. I propose and respond to objections rooted in the issues of liberty, autonomy, dignity, manipulation, and transparency, as well as their relation to current examples of applications of nudges in fields such as health, economics, and policy-

making. I also argue for the expansion of the nudge approach to other fields like social and graphic design, which may raise similar ethical concerns.

37. *An Examination of Over-Protective Parenting as a Link Between ADHD and Anxiety In 5-7 Year Old Children*
Molly Kegley and Alexandria Meyer, Florida State University

One of the most common psychological disorders, Attention Deficit/Hyperactivity Disorder is often diagnosed in children and results in a varying levels of impairment, potentially affecting the child's overall well-being. The key symptoms of ADHD can include restlessness, inattention, hyperactivity, and impulsivity. Although there is a high co-morbidity between ADHD and anxiety, it has been heavily contested what the possible mechanisms that underlie the link could be. Some studies have suggested that specific parenting styles may be linked to the high co-morbidity rates, suggesting that the symptoms of ADHD may lead to controlling or overprotective parenting. Overprotective parenting in particular has been linked to increased anxiety levels in children and could act as a catalyst for increased levels of anxiety among children with ADHD. The current project aimed to examine whether the co-morbidity between anxiety and ADHD was partially due to over-protective parenting by testing a mediation model in a group of 100 5-7 year olds. We utilized the DSM-IV Child Behavior Checklist (CBCL) to measure the level of ADHD and anxiety symptoms as reported by the parent and the Parenting Styles and Dimensions Questionnaire (PSDQ) to measure the overprotective tendencies exhibited by the parent. Results supported a mediation model wherein the link between ADHD and anxiety symptoms was significantly mediated by over-protective parenting style. This evidence supports the link between increased levels of childhood anxiety and overprotective parenting, connecting that link with the high rates of co-morbidity between childhood ADHD and anxiety, broadening understanding of abnormal child psychopathology.

38. *Health-Related Attitudes and Behaviors Among College Students in The U.S. and Europe: A Cross-Cultural Perspective*
Elena Finver and Dejan Magoc, Stetson University

Health-related attitudes and behaviors among college students in the U.S. and Europe: A cross-cultural perspective The purpose of this study was to compare cultural and gender differences regarding health-related attitudes and behaviors of U.S. and Serbian college students. In 2017, 109 Serbian students responded to a survey regarding dietary and eating practices, physical activity, alcohol behaviors, and sleep patterns. These responses were compared to 939 U.S. student responses conducted in 2013-2014 at University of Texas at El Paso and Eastern Illinois University. Results show that mean BMI differed significantly between samples: mean BMI for Serbian college student sample was 21.97 (kg/m2) while the U.S. sample had a mean BMI of 25.92 (kg/m2). Among Serbian college students, power of food was positively related to alcohol consumption Among the U.S. college students, alcohol consumption was negatively correlated to self-rated mental/emotional/psychological health, meaning those who rated their self-rated mental/emotional/psychological health higher were less likely to have a problem with

alcohol. Health-related behaviors, such as alcohol use, should be taken into consideration when designing public health interventions and initiatives among different cultures.

39. *Hybrid Zone Analysis of Fundulus grandis and F. heteroclitus*
Emily Kerns and Matthew Gilg, University of North Florida

Evolution is essential in understanding many biological processes. Hybrid zones, regions where two species interbreed, provide a unique opportunity to study the mechanisms and interactions of evolutionary processes. On the east coast of Florida there is an established hybrid zone of two fish, *Fundulus grandis*, which reside south of the zone, and *F. heteroclitus*, which are north of the region. While this region is known to have a relatively stable hybrid population, the extent of hybridization, fitness of the hybrids, and geographic center where hybridization is occurring are not well studied. Fish samples were collected throughout the hybrid zone and analyzed at four different loci. They were subsequently placed on a hybrid scale based on the genotypes on each of the loci. The scale revealed that hybrids are reproducing with the parent species, resulting in some hybrids being more similar to one species than another. Analyzing the hybrid scale and how the population changes over time has revealed the fitness level of the various types of hybrids. Finally, it was previously hypothesized that climate change may cause the hybrid zone to move north. This is because as the water becomes warmer, mangrove habitats will shift north. *F. grandis* prefer mangrove habitats and are better adapted to warm waters than *F. heteroclitus*. However, previous research has revealed that the hybrid zone may be moving south. More research is needed to confirm that the hybrid zone is shifting, allowing new hypotheses to be proposed to explain this pattern.

40. *The Unheard Voices of Assam, India*
Sabrina Mato and Kimberly Reid, Florida State University

The Unheard Voices of Assam is a grassroots project focused on evaluating the effectiveness of the education system in Assam, India. It is a photo voice presentation on a creative poster that encompasses the various perspectives of individuals from three levels of development: from the Garbhanga forest to the city of Guwahati. The qualitative research is focused on analyzing the perspectives of these people and comparing their conclusions to contextual observations and research conducted through the development of the year. Guwahati is the largest city and hub for education in the providence of Assam. Nonetheless, it lacks the adequate resources to supply appropriate education. Further, there are an overwhelming amount of choices for the higher privileged caste statuses, while the lower castes lack the basic access to obtaining schooling. Moreover, extensive discussion was completed on the secluded village of the Garbhanga forest. Utilizing a translator and enormous quantity of research, the project was successful in understanding the struggles of the members of the community and what they need to establish a sustainable model for their future. The importance of the progressive changes these people are undertaking is also showcased through their brief descriptions. A decade ago, was the first time a family from this village sent their child to obtain an education, and since then, the community has been able to improve its position in the political sphere. This research

project illustrates the importance of education and the immense impact it has on individuals globally.

41. *Proof that Our Universe can Only be Newtonian or Relativistic Using Einstein's Special Relativity*
Jamal Khayat and Cotas Efthimiou, University of Central Florida

In physics, theories are derived from a fundamental set of axioms, using a central idea to guide calculations and construct useful equations. A particular derivation, guided by its particular central idea, is called a formulation. For example, the most well-known formulation of the theory of Classical Mechanics is the Newtonian formulation, centered on Newton's three laws. There exist, however, alternative formulations of Classical Mechanics. Similarly, Einstein's theory of Special Relativity (SR) has multiple formulations but is most commonly taught using the Lorentz transformation formulation. The formulation explored in this research project is the lesser-known K-Calculus. K-Calculus uses the transmission of light signals between observers to derive relationships between measured quantities. Its name comes from the ratio K that relates time intervals between observers. The goal of this project is to use the K-Calculus to derive SR, assuming only the principle of relativity (and other fundamental axioms). This will show that the constancy of the speed of light postulate is a superfluous one. Many students of physics are unaware of this fact likely due to the complexity of the formulations with which it has been proven. K-Calculus, on the other hand, provides a simple and intuitive method for understanding SR and can be used to make this fact more presentable to students. Thus, the value of this project lies in its pedagogical implications. The proof will arrive at the same set of equations predicted by SR without assuming the superfluous postulate. Consequentially, a universally constant speed emerges naturally from the equations, which we identify to be the speed of light.

42. *For Ours Is the Kingdom: Infighting in Chicago in the early 20th Century*
Marissa Hanley and Kimberly Reiter, Stetson University

This paper investigates this little crisis of nations within a nation. The Archdiocese of Chicago was at one point distinctly adverse to encouraging diversity and ethnic identity within parishes. In the early twentieth century, spurred on by American nativist sentiment and progressivism, Cardinal Mundelein (1919-1939) enacted sweeping reforms to promote assimilation. In short, this meant eliminating bilingual curricula, striking "ethnic" feast days from the record, and changing the way parishes saw incoming immigrants. While this effort was lauded by Chicago's white-Protestant and Irish elite, many of whom were themselves third generation Americans, it failed to quell any of the major infighting concerns striking up within parishes and their surrounding neighborhoods. The situation was put under further stress by the increasing interactions and confrontations between newly arrived Polish and Irish immigrants into the diocesan parishes in the West and South sides of the city. The situation was, at best, precarious, and promised to erupt into violence without a firm hand from the archdiocesan seat. Despite the fact that both groups

were Catholic, evidence suggests that the actions and non-actions of Cardinal Mundelein and other ranking archbishops fanned the flames. In this paper, I hope to address the following questions. Was the Archdiocese more interested in pushing a progressivist-driven ideal of integration on its immigrant flock in lieu of quelling the violence and nationalistic tendencies of those same parishes? Additionally, an one find personal sources that accurately depict the plight of those in the midst of this infighting?

43. *Ozone Sensors Payload on Solar Eclipse and Nasa High Altitude Balloon Flights*
Jesse Lard and Nirmal Patel, University of North Florida

The University of North Florida (UNF) sensors group successfully launched ozone sensor payloads in the stratosphere by (i) Solar Eclipse balloon flight and (ii) NASA high altitude 2017 balloon flight. During the 2017 total solar eclipse, UNF ozone sensors payload was launched to test the effect of a solar eclipse on ozone production from Rexburg, Idaho. The sensor payload on the Solar Eclipse flight contained eight nanocrystalline oxide semiconductor film arrays that take simultaneous measurements of ozone concentrations. A battery operated electronic data logger was used to measure and save the data. The flight lasted about 1 hour. The sensor payload on the NASA balloon flight consisted of three different types of nanocrystalline thin film gas sensor arrays. Each sensor array has eight thin film gas sensors, one pressure sensor, three temperature sensors, one GPS and microcontroller circuit board. The payload met the specified design criteria of NASA and was certified for the balloon flight. The payload was launched into the stratosphere at an altitude of 120,000 feet from the NASA-Columbia Scientific Balloon Facility, Fort Sumner, NM on September 4, 2017 at 14.04 UTC. The flight was terminated and impacted on September 5, 2017 at 3:44 UTC. This flight had a total flight duration of 13 hours and 40 minutes. The sensors payload measured ozone gas during the flight and sent the 15 KB data file every 15 minutes. The data analysis confirmed that all sensors were working successfully and measured the ozone gas profile in the stratosphere.

44. *In the Eye of The Storm: Exposure of Sea Turtle Nesting to Named Weather Systems in the Northern Gulf of Mexico*
Alexandra Lee, Mariana Fuentes, and Natalie Wildermann, Florida State University

Hurricanes cause wind, rain, and storm surges that have the potential to impact sea turtle nesting beaches and have a significant influence on the hatchling success of surrounding nesting populations. Several studies have looked at the overlap between nesting beaches and hurricane activities. However, there is a lack of temporal assessments of the exposure of sea turtle nesting beaches to hurricanes, particularly in shifts of temporal trends in relation to nesting season. Hurricane season in the northern Gulf of Mexico coincides with the nesting season of multiple species of sea turtles. There is evidence suggesting hurricane frequency and intensity is changing at both a spatial and temporal scale. Thus, the aim of this study is to assess the spatio-temporal exposure of sea turtle nesting beaches to named weather systems in the northern Gulf of Mexico. We will overlay hurricane tracks for the past two decades with the nesting beaches of the northern Gulf of Mexico loggerhead recovery unit. We will assess spatial overlap between named weather systems

and nesting beaches, if there has been a temporal shift of hurricane frequency in relation to nesting season and quantify the exposure of nesting beaches in relation to named weather systems frequency and intensity. Results of this study will help identify areas that might require targeted preventative conservation measures to mitigate the effect of named weather systems on sea turtle nesting success.

45. *The Social Determinants of Health: Access to Clean Water in Rural Communities on The North Coast of The Dominican Republic*
Kilian Kelly and Lindy Davidson, University of South Florida

Clean water accessibility is a key concern in international health organizations. On a global scale, researchers are identifying barriers to water accessibility in order to improve health outcomes. Such is the case in the Dominican Republic. There are many social factors that influence an individual's ability to access clean and safe water. This research applied anthropological field methods of ethnographic observation and personal interview to identify sources of water and structural barriers that limit water access in rural communities. Factors including education, social class, and gender all have significant influences on accessibility to water and must be investigated to identify the effect they play on the subsequent health outcomes of consuming impure water. Findings show that communities with higher income had better access to purified water and experienced a smaller burden of infectious water-borne diseases. Communities with limited income as well as accessibility limitations due to social status had worse health outcomes. Parasitic infestation and cranial/facial fungal growth were the most commonly experienced health burdens due to the impure water. These are considered diseases of poverty, as they are most often caused by structural barriers that maintain the cycle of poverty. More work is necessary in addressing these structural phenomena that limit water access, as merely treating the symptoms without addressing the underlying causes of infection will not improved public health.

46. *Force-Vector Analysis and Statics Mechanical Testing on a Working Hydrokinetic Sustainable Unidirectional Tidal Generator Prototype*
Zachary Loeb and Ricardo Zaurin, University of Central Florida

The renewable energy generated by hydrokinetic tidal forces represents a sustainable emission free source for the generation of electricity. Unlike solar power which depends on cloud cover and weather patterns, tidal forces are less affected by changing environmental conditions. Tidal Generators due to their submerged nature, have critical structural design constraints. These include the need to minimize water flow obstructions, requirements for high reliability reducing ongoing maintenance and the ability to preserve structural integrity when experiencing constantly changing forces from multiple directions. A prime location for the placement of a Tidal Generator is the Florida Stream, which experiences an average flow of 2.235 m/s (5 mi/h) which was used as a baseline average flow-rate. For this project, a working unidirectional 50:1 scale model horizontal tidal generator prototype was constructed. Using a known flowing artificial stream, the

drag forces were measured across multiple directions on the base support structure. For this scale model the testing and analysis performed includes stability, distribution of forces, resulting forces and performance. The mean mechanical power generated for a flow of 2.235 m/s was calculated to be 124.57 W/h and the Tip Speed Ratio is 5.789. The electrical power generated was 54 W/h. The values of the model were used to predict full scale results of 135 kW/h (electrical). This project created a scalable model that can be used in the development of a larger scale tidal generator prototype, which is a critical first step in the future deployment of this type of alternative energy generator.

47. *Personal Care Products: Where Are the Phthalates?*
Tara Lunsford, Cassandra Korte and Erika Doctor, Lynn University

Phthalates are chemicals that are commonly used as a plasticizer in personal care products. This class of compounds is added to help prevent products from drying out. Phthalates have been shown to have potential negative impacts on reproductive organs, cause birth defects, effect the endocrine system, as well as causing other ill effects. For example, previous work found that phthalates can have an effect on the endocrine system of adolescent individuals. In an intervention study, phthalate exposure was reduced when these products were not being used. The purpose of the present study is to examine phthalate abundance in personal care products and to design an intervention study to lessen exposure. To identify products containing phthalates, we used the Environmental Working Group's Skin Deep cosmetic database. This database contains personal care products and their ingredients. We used the database to identify products that contain phthalates and the type of phthalates used. The most commonly used phthalate is polyethylene terephthalate, with it currently found in 610 products, with 314 of which are nail polish. There are also 12 other kinds of phthalates that are regularly used in personal care products, ranging from lipstick to sunscreen. We can see that there are still a multitude of products that contain potentially harmful phthalates. This study is the foundation to future work looking at exposure to phthalates in adult populations and assessing sources of exposure from personal care products.

48. *Investigating the Variation in Substrate Specificity Between Type I and Type II PRMT Isozymes*
Sarah Mann and Bryan Knuckley, University of North Florida

Protein arginine methyltransferases (PRMTs) are a group of mammalian enzymes that modify histone tails by methylating arginine residues. There are nine enzymes in the PRMT family (PRMT1-9), each varying in substrate specificity. PRMT1, which catalyzes the formation of asymmetric dimethylarginine (ADMA), leads to the activation of tumor suppressor genes. By contrast, PRMT5 catalyzes the formation of symmetric dimethylarginine (SDMA), leading to the repression of tumor suppressor genes. Overexpression of PRMTs is associated with the onset of various cancers (i.e. breast cancer and prostate cancer), making PRMTs possible drug targets. To study the differences in substrate specificity of the enzymes, a peptide library was synthesized in a 96-well plate and screened against both PRMT1 and PRMT5 using a high-throughput

screening methodology developed in our lab. The screens resulted in the identification of seven potential substrates for PRMT 1 and five potential substrates for PRMT5. The substrates are currently being synthesized and will be further analyzed using a radioactive assay to validate they are true substrates of the enzyme. Comparing the differences in substrate specificity between PRMT1 and PRMT5 will aid in the synthesis of PRMT-specific inhibitors.

49. *Factors influencing concentrations of small plastics on Florida beaches*
Gaylen Martin and Alanna Lecher, Lynn University

Concentrations of micro-plastics on Florida beaches The abundance of plastic pieces has been increasing in the environment. Not only visible pieces of plastic have been found on Florida beaches but micro-plastics are equally abundant. Previous research has shown that micro plastics are found in higher concentrations in the Atlantic Ocean as apposed to the Gulf of Mexico. As a result, plastic has washed up on beaches, creating areas of high concentration. We hypothesized that there will be a higher concentration of micro-plastics in sand on the Atlantic coast of Florida compared to the Gulf coast of Florida. 10 liters of sediment was collected from the strand line of beaches on the Atlantic and Gulf coasts including: Boca Raton and Indian Rocks Beach. Using sieving and density separation techniques, plastic was separated from the sediment, and the number of micro-plastic pieces counted. Preliminary results indicated that the hypothesis was supported and there was a significantly higher abundance of micro-plastics on the Atlantic coast compared to the Gulf coast.

50. *Tuberculosis Bites: Understanding the Connection Between Folklore and Disease with Vampires and Tuberculosis*
Maiah Letsch and Paul Croce, Stetson University

Vampires, or at least the idea of a blood-sucking reanimated corpse, have fascinated people for thousands of years. These beliefs in the western notion of vampirism, and the practices that accompanied them, originated in Eastern Europe, before they swept through Western Europe and ultimately into New England, America. Strong evidence connects vampirism with historic outbreaks of tuberculosis. When examining the people who most often claimed to be victims of vampires, the symptoms of a vampire attack, the epidemic disease, and the history of the medicine, the information suggests vampire victims were actually suffering from tuberculosis My research may raise the question: could have vampirism just coincidentally spread at a time when disease itself shaped daily life due solely to the reports coming from Eastern Europe with no scientific connection at all? Perhaps, but it is much more likely that the belief in vampires met panicked proportions because western Europeans saw their family members dying of symptoms that matched exactly with the reported vampire victims from Serbia. Thus, an examination of pre-nineteenth century vampire myths, the history of medicine at the height of the vampire myth, and the correlation in time between tuberculosis outbreaks and both the 18th Century vampire paranoia’s in England and New England all suggest that tuberculosis is the true disease behind the vampire myth, rather than rabies or porphyria, the other proposed candidates.

51. *Developing Peptoid-Based Inhibitors for the Protein Arginine Methyltransferase Family*
Braidy May and Bryan Knuckley, University of North Florida

Protein arginine methyltransferases (PRMTs) are a family of enzymes that serve to methylate the arginine residue of proteins, most notably are the histones. Methylation of arginine residues within histone proteins can lead to the onset and progression of cancer. For this reason, it is important to control and maintain the catalytic activity of PRMTs. We are interested in developing novel inhibitors for this family of enzymes to turn off their catalytic activity and eliminate disease progression. Our initial studies suggested that modifying the peptide backbone of the histone tails to a peptoid-based structure leads to inhibition of PRMT1. This was surprising and has provided a new avenue to explore. These peptoid-based inhibitors are synthesized using the specific peptide sequence. To this end, we have synthesized peptoid monomers (*i.e.*, amino acids of peptoids) for arginine, lysine, and serine. The peptoids are currently being constructed and will be tested as PRMT inhibitors. This information will hopefully provide us with additional clues in developing more specific inhibitors.

52. *Language and Social Skills in Relation to Teacher-Reported Aggression, Victimization, and Prosocial Behavior in Preschool Children*
Molly McQueeney, Hannah Kinnon, Monica Lamie and Lyndsay Jenkins, Florida State University

The purpose of this project is to examine the association between language development and social skills in preschoolers. We are in the process of gathering audio recordings of the preschool students during free play, which we will then examine to understand how and when the children fall into the categories of bully, victim, and defender (i.e., helpful, prosocial children). Teacher reports on the students' social and verbal skills, along with results of language test administered by speech pathology students will be collected and examined for a correlation with the students' behavior. We expect to find that children who defend their peers will have higher language and social skills and those who are victims and bullies have lower levels of these skills. In the future, we aim to investigate how other variables such as the children's socio-economic background, family status, and school location also affect bullying in preschool age children. Our goal is to provide further information from our research to schools and educators in order to aid in identifying development of prosocial, aggressive, and defensive behavior during the preschool age period.

53. *A Study on the Impact of Technological Advancement on Community Bank Lending Performance*
Andrew Ong and Ahmet Kullu, University of Central Florida

This study investigates the impact of technological advancement in community bank lending, more specifically how it affects relationship lending. The growing use of technology in traditional banking settings and on banking services can influence the way a deal or a transaction is executed. I examine how the use of technology affects relationship lending, and how different generations of bank customers respond. Community bank lending is used to help grow small businesses that are looking for a reliable means of credit. These small businesses can be 'mom and pop' stores to startup businesses. Relationship lending is an important driver of small business lending which is essential to fund growth of both jobs and the economy as a whole. The practice and effects of relationship lending can heavily influence customer success. As the main source of credit to small businesses, new changes in technological advancement have both increased the efficiency and complexity of bank-customer exchanges. In an area of banking where opaque information is important yet difficult to value, the question arises as "How a changing technological landscape will affect this long performed practice?". The study is aimed to contribute to the understanding of how banks can better utilize their resources to improve their lending portfolio.

54. *An Analysis of U.S. Municipal Bond Yield Curves*
Amaury Minino, Hongqei Long and Sher Chhetri, Florida Atlantic University

When economists attempt to forecast the future of the US economy, the yield curve is often valued as a reliable tool. Yield curves, which are based on the interest rate of US Treasury bonds, reflect investor expectations of the future economy. Consequently, they are a predictor of economic growth, since investment is one of the most volatile factors of the US GDP. A better understanding of future economic growth will allow us to make better predictions as to the occurrence of recessions and booms. This in turn gives the Federal Reserve more power in stabilizing our Nation’s economy. We study different methods to analyze the yield curve. Current literature regarding yield curve modeling, analysis, and forecasting show a variety of novel approaches. Many of these approaches are variations of one another, with each variation presenting its own merits. We used the available historical data on US Treasury Bonds to analyze the forecasting abilities of choice methods. Our preliminary results show that the Adaptive Dynamic Nelson-Siegel model seems superior to other models. We hope our research will popularize the most effective model among financial analysts.

55. *Plasma 8-hydroxy-2’-deoxyguanosine as a Biomarker of PAH Exposure in Deepwater Sharks Exposed to The Deepwater Horizon Oil Spill*
Brittany Minnig and Jim Gelsleichter, University of North Florida

The Deepwater Horizon (DWH) Oil Spill was the largest oil spill in history, resulting in excessive amounts of contaminants released into the Gulf of Mexico. Polycyclic aromatic hydrocarbons (PAHs) are constituents found within the oil that pose the greatest health

concern for marine life in and around the various contamination zones. These carcinogenic compounds have a high lipophilicity allowing them to bioaccumulate and localize in fat stores. PAHs are documented as being capable of inducing high amounts of intracellular reactive oxygen species (ROS), causing increased oxidative damage to biomolecules. Normally, antioxidants repair these damaged systems and replace depleted macromolecules, but this function is hindered when DNA degradation occurs and corrupts the integrity of the genome. 8-hydroxy-2'-deoxyguanosine (8-OHdG) is formed as a byproduct of oxidative DNA damage caused by ROS, making it a useful biomarker of pollutant exposure and effects. In this study, plasma from Centrophorus granulosus and Squalus clarkae collected from the spill zone between 1-7 years after the spill was tested for 8-OHdG. Higher concentrations of plasma 8-OHdG were observed in S. clarkae collected from oiled sites in 2011-2012 in comparison with their reference counterparts, but these same differences were not observed in more recent collections perhaps signifying increased oxidative stress caused by PAH exposure has subsided following the spill. However, plasma concentrations of 8-OHdG did not exhibit a declining trend in C. uyato collected from highly oiled sites between 2011 and 2017 possibly suggesting levels of PAH exposure were below thresholds for inducing significant levels of DNA oxidation.

56. *Faith-Based Cognitive Behavioral Intervention for Depression in African-American Dementia Caregivers*

Inge Montoya and Robert Glueckauf, Florida State University

Caregivers of older adults with dementia are at significant risk for the development of mental health problems, particularly depression. Previous research has shown 29% to 50% of dementia caregivers are diagnosed with depression during the caregiving process. Although cognitive-behavioral intervention has been shown to reduce depression in distressed dementia caregivers, access to depression-reduction treatment in the African-American dementia caregiver population has been thwarted by financial constraints, transportation difficulties, and lack of cultural concordance. The African-American Alzheimer's Caregiving Training and Support 2 (ACTS 2) project, a faith-based, cognitive behavioral intervention program, was developed to address these shortcomings.. ACTS 2 is delivered over telephone by trained African-American lay church workers with faith orientations similar to those of African-American dementia caregivers. The ACTS 2 program consists of 12 sessions, 7 group skills-building sessions (e.g., relaxation training coupled with calming prayer and assertiveness training) and 5 individual sessions focusing on caregivers' identified self-care and caregiving problems. The primary aim of the proposed study is to examine the benefits and drawbacks of the spiritual components of the ACTS 2 integrated, faith-based cognitive- behavioral intervention for depressed African-American dementia caregivers.

57. *Reducing Food Insecurity to Combat Obesity*

Taylor Rentz, De'vohn Roman, Norrella Walker and Dawn Witherspoon, University of North Florida

Food insecurity is associated with a lack of nutritious food and an increased likelihood of missing a meal. In 2009, 4.2 million households with children were food insecure (Nord, 2010). While the United States produces enough food to feed the entire nation, almost 15 percent cannot adequately obtain fresh foods to eat. In the US the prevalence of obesity in 2013-2014 was 35.0% among men and 40.4% among women (Flegal, et al, 2016) and 16% among children. Food insecurity can put individuals at risk of obesity because of altered food choices and problematic consumption patterns (Kaur, 2015) as well as lack necessary vitamins and nutrients. To gather recommendations and innovations from community members on how to reduce food insecurity and combat obesity. The focus area is Zone 1 of Jacksonville, FL. This is an area with limited access to transportation, and a median household income of $24,000 or less annually. Qualitative methods were used for data collection, including interviews with key community members and focus groups. Interviewees stated concerns about access to fresh fruits and vegetables in their community and reported that transportation is a major barrier to obtaining them. Also, many of the children in the neighborhood do not have bicycles and do not know how to ride. An initiative was started to provide children with bicycles, bike safety equipment and lessons. The goal is to increase physical activity and provide transportation to fresh food sources, both of which should help lower obesity rates.

58. *Clay Body Research*

William Mueller and Trevor Dunn, University of North Florida

This research focuses on developing a slip-casting clay body designed to be fired in a wood-burning kiln. Six specific raw materials each influence this clay body formulated towards a unique style of work. Clay is a complex material. During the firing process, the kiln reaches 2350°F and vitrifies the clay body. The materials chosen all play a role in keeping the clay in balance during the extreme conditions of the firing. The body is one that is used for slip-casting. A process where deflocculated slip is poured into plaster molds to create thin clay shell of the cast object. Deflocculation is a process in which a dispersing agent is added to the clay slip. This Dispersant changes the electrical charge of the clay particles which causes them to attract to each other to create a tighter structure. The water needed to lubricate these particles is then drastically reduced which increases the density of the clay. This density is necessary in order for the clay to maintain its strength while still being fluid enough to pour into and out of plaster molds.

59. *Effects of Mechano Growth Factor on C2c12 Skeletal Muscle Cells*
Jeremy Piacente, Nikki Huynh, Marie Gibbons and Kiminobu Sugaya, University of Central Florida

The advent of cellular agriculture is upon us and the field is slowly but surely beginning to take off. Cellular Agriculture hopes to replace the unsustainable method of traditional livestock raising by focusing on in vitro cell growth of muscle tissue popular in American food culture. Myocyte satellite cells proliferate for a limited amount of time before differentiation into myeloid fiber cells. Once differentiation has occurred, proliferation ceases. For application to industrial sized cellular agriculture, extended proliferation for as long as possible prior to differentiation is desirable. At Sun Yat-sen University, MGF was used to promote proliferation and inhibit differentiation of porcine satellite cells through addition of human MGF into culture medium. Through our experiment, we hope to promote proliferation of C2C12 muse satellite cells whilst inhibiting differentiation via MGF and without the use of FBS, and to stimulate differentiation once desired via transfer to differentiation media.

60. *Spectral Tuning of Rhodopsins from Tampa Bay Fish*
Ciara Myer and Jeffry Fasick, University of Tampa

Rod visual pigments in marine fish rely on amino acid substitutions to adapt their spectral sensitivities to light at different depths in the ocean. Here, we examined the key amino acid substitutions involved with spectral tuning of rhodopsins from *Halichoeres bivittatus, Epinephelus morio, Rhomboplites aurorubens, Acanthostracion quadricornis, Haemulon plumierii, Prionotus scitulus, Diplectrum formosum, Eucinostomus gula, Opsanus beta,* and *Chilomycterus schoepfii*. Retinal dissections were conducted to obtain RNA that was then reverse transcribed into cDNA. Primers were designed to amplify the rhodopsin gene and sequence analysis was performed. Amino acid substitutions at positions 83, 292, and 299 are responsible for a shift in absorbance spectra of this retinal pigment. Preliminary results from the ten species above resulted in estimated absorbance maxima ranging from 493-501 nm, which strongly correlates with the depth of their habitat. *Bos taurus* rhodopsin, whose absorbance spectrum and absorbance maximum being previously defined, was used for comparison. Based on molecular modeling of the rhodopsin proteins, our data shows amino acid substitutions occurring between the Tampa Bay fish and the control sequence. Characterization of fish rhodopsin provides a greater understanding of how aquatic rhodopsins are selected for particular underwater photic environments.

61. *Financial Responsibility & School Achievement*
Jennifer Naginsky, Monique Mahabir, Rachel Pauletti and Patrick Cooper, Lynn University

Financial Responsibility & School Achievement The purpose of this research study was to examine associations between student financial responsibility (for their college tuition), academic achievement, and personality characteristics. Participants (N = 118; M=46) were recruited from a private liberal arts university and were entered into a drawing for a $50 gift card in exchange for their participation. Participants completed a questionnaire using Qualtrics software regarding their tuition payments (i.e., the percentage paid by themselves, parents, scholarships, and financial aid, etc.), college self-efficacy, (as a measure of academic achievement) and personality characteristics (Hogan, 2011). Student GPA was recorded from official university transcripts as another indicator of academic achievement. Based on previous studies (e.g., Weaver, 2013) we hypothesized that there would be a moderate positive correlation between the student's personal responsibility for their tuition and their academic achievement. Hypotheses about associations between personality and financial responsibility/achievement were largely exploratory. Results will enlighten researchers and school administrators on the associations between financial burdens, achievement and involvement in the university setting. These results will also be helpful for academic advisors to overcome future educational obstacles for greater student academic success.

62. *Factors Influencing and Predicting the Likelihood of Mental Health Help-Seeking of Collegiate Student-Athletes*
Maegan Nation and Matthew Bird, Florida State University

Collegiate athletes experience mental health concerns at similar rates to non-athlete students. The student-athlete population underutilizes professional mental health help with only 10% of those in need seeking services. Criticisms of the extant research on student-athlete mental health help-seeking states that studies lack theoretical guidance, and often conveniently sample participants who are not experiencing a mental health issue. The aim of this study was to conduct a theoretically driven investigation assessing factors of help-seeking associated with the Health Belief Model and Reasoned Action Approach while sampling student-athletes who identified as currently experiencing a personal or emotional health concern. More specifically, the purpose of this study was to investigate which factors of help-seeking behavior predict the likelihood that a student-athlete will seek professional help, and to identify the differences in help-seeking factors between student-athletes with a low likelihood of seeking help compared to those with a high likelihood of seeking help. Participants were 269 NCAA student-athletes who completed an online survey assessing factors related to their help-seeking behavior. A multiple liner regression identified the perceived benefits, perceived susceptibility, and perceived attitudes factors as significant predictors of the likelihood that a student-athlete would seek treatment. Results from a one-way ANOVA showed significant differences between the low likelihood and the high likelihood of seeking help group on the perceived seriousness, perceived susceptibility, perceived benefits, instrumental barriers, stigma-related barriers, and the perceived attitudes factors. Findings from this study have implications for athletic

departments, campus counseling centers, and future interventions related to mental health help-seeking.

63. *More than Discourse: Islam, Others, and Radicalization in the West*
Selina Nevin and Ross Moret, Florida State University

Too often the study of rationality is not taken into consideration in the discourse of religious ethics. Additionally, the lack of focus on this study of rationality is also mirrored in the sometimes forgotten critical cultural contexts that must also be examined when studying discourse of religious ethics. In an attempt to further analyze the radicalization of Muslims, the research I have conducted looks at how the intuitive and cognitive functions of thinking and rationality can supplement one another and affect moral foundations while keeping in mind to consider historical and cultural contexts of a particular case that is being studied. The reliance on different moral foundations, whether individual or relational, affect the different ways in which Muslims can be radicalized. The four elements that contribute to radicalization are the belief that there is a war against Islam, sense of moral outrage, personal experiences that support these claims, and belonging to a radicalized group. This research will attempt to answer how the reliance on different moral foundations can help us to better understand the radicalization process and potentially provide insights in ways to combat the radicalization of Muslims.

64. *Landfill Leachate Pretreatment: Metal Recovery and Nitrogen Removal*
Amanda Ogden, Runwei Li and Youneng Tang, Florida State University

In the Municipal Wastewater Treatment Plants (WWTP) of Florida, there is an ignorance to acknowledge landfill leachate as a threat to the environment and as a violation of the WWTP regulations and environmental ordinances. Leachate is water that has percolated from solids, or in our case landfill material. Landfills discharge leachate to these treatment facilities, the goal of this project is to research and develop an inexpensive, sustainable leachate pretreatment method that includes the metal extraction and an anaerobic filter to remove nitrogen in the wastewater treatment plants. This process will ideally remove heavy metals and nitrogen that are toxic to the environment. The method of this process is by forming metal precipitates from the leachate samples, thus separating the metal sulfide precipitates making it possible to extract the metals by a magnetic separator. We will be utilizing the National High Magnetic Field Laboratory for metal separation. The main heavy metals that we are researching are Iron, Selenium, and Lead. The nitrogen in the leachate will be analyzed, ideally, the proposed method can partly remove the total nitrogen. This will allow us to study the nitrogen species in the leachate and how it can be converted to bio-available nitrogen. The anaerobic processes will be tested by reactor operation and loading optimization, the process filter will increase the ability for nitrogen removal in the wastewater treatment plants.

65. *The Mighty Warriors of The Soil: Identification and Analysis of Novel, Antibiotic Producing Bowmanella Species*

Kira Melton and Erick Warrick, State College of Florida, Manatee – Sarasota

According to The Center for Disease Control, two million people are infected by antibiotic resistant bacteria annually. The Small World Initiative developed a crowd-sourcing network, intended to discover bacteria producing novel antibacterial compounds. Using the protocols outlined in the Small World Initiative handbook, six antibiotic producing bacteria were identified. One isolate presented broad spectrum antibiotic capabilities. By sequencing the 16S rRNA gene, the isolate was identified as a member of the *Bowmanella* genus, most closely related to *Bowmanella denitrificans*, and *Bowmanella pacifica*. Antimicrobial activity was observed when tested against the ESKAPE safe relatives, *Enterobacter aerogenes, Staphylococcus epidermis, Pseudomonas putida, Bacillus subtilis, Salmonella typhimurium, Actinobacter baylyi, and Escherichia coli*. Preliminary chemical extraction revealed antimicrobial activity against S. epidermis. Further chemical extractions using solvents of different polarities will be performed isolating the chemical compound responsible for its antimicrobial activity. The bacteria will be further identified using Multilocus Sequence Analysis (MLSA) and biochemical testing. The *Bowmanella* isolate will also be challenged against ESKAPE pathogens *Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*. MLSA and biochemical data could lead to the discovery of a novel species. Antibiotic activity against the ESKAPE pathogens and successful chemical extraction of the compound(s) responsible could lead to the discovery of a novel antibiotic.

66. *Sociodemographic Factors Associated with Ever-Use of Hookah Among Young Adults in The U.S.*

Victoria Owens and Julia Soulakova, University of Central Florida

Although cigarette smoking rates have declined over the past decades, other forms of tobacco use have become more prevalent in the U.S. Among youth and young adults (YYA), hookah (or "water pipe") smoking is an emerging health-risk behavior. Prior studies examined hookah use among high school and college students and did not consider young adults as a whole. To address this deficiency, this study estimated the prevalence of hookah ever-use (i.e., any use in lifetime) as well as associated characteristics among 18-30 year-old YYA in the U.S. Methods. We used pooled data from the 2010 –2011 and 2014 –2015 Tobacco Use Supplement to the Current Population Survey. The surveys were administered in person or by phone. We performed Rao-Scott chi-square tests at the 5% significance level. Results. The rate of hookah ever-use increased significantly ($p<0.001$) from 7.1% in 2010-2011 to 12.0% in 2014-2015. The ever-use was associated (all p's < 0.001) with several sociodemographic characteristics, such as age, sex, race/ethnicity, education level, employment status, marital status, and two geographical factors of residency in the U.S., as well as current use of other tobacco products (all p's < 0.001), e.g., e-cigarettes and smokeless tobacco. Discussion/Conclusion. The significant increase in prevalence of hookah ever-use from 2010-2011 to 2014-2015 indicates that hookah smoking is becoming increasingly popular among YYA in the U.S.

67. *Identification of A Novel Enhancer/Chromatin Opening Element Associated with High-Level Γ-Globin Gene Expression*

Maclean Bassett and Jörg Bungert, University of Florida

The human β-globin gene locus is located on chromosome 11 and constitutes five β-type globin genes that are organized in a manner reflecting their expression during development; an embryonic ε-globin gene located at the 5' end, followed by the two fetal γ-globin genes, and the adult β- and δ- globin genes at the 3' end. A novel DNase I hypersensitive site (HS) located 4 kb upstream of the Gγ-globin gene (HBG-4kb HS) was targeted as a candidate for affecting expression of γ-globin. In the human erythroleukemia cell line K562, this site is occupied by transcription factors USF1, USF2, EGR1, MafK, and NF-E2; and exhibits histone modifications typical of enhancer regions. We generated a synthetic zinc finger DNA-binding domain (ZF-DBD)) targeting the HBG-4kb HS. The HBG-4kb ZF-DBD interacted with the target site in vitro and in the context of cells with high affinity and specificity. Direct delivery of HBG-4kb ZF-DBD to K562 and primary human erythroid cells resulted in a reduced association of the transcription factors identified and active histone marks present at and downstream of the HS site. Reduction in γ-globin gene expression was observed following introduction of the HBG-4kb ZF-DBD. The data demonstrate that the HBG-4kb HS site affects fetal γ-globin gene expression and extrapolation suggests that the site may act by opening chromatin in a directional manner.

68. *Thermal Decomposition of Prussian Blue Analogue as Precursors for Magnetic Nanoparticles*

Sara Parrish, David Hardy and Geoffrey Strouse, Florida State University

Binary alloyed nanocrystals are important for a wide range of applications, including catalysis, magnets, and plasmonic metals. For example, iron-cobalt alloys can be prepared as a carbide acting as a catalyst in Fischer-Tropsch processes, or as an intermetallic for soft-magnet applications. Common nanomaterial synthetic techniques, isolate nanocrystals through bottom-up protocols where size can be manipulated through reaction concentration, time, temperature, and ligand. An alternative strategy is to template a mesoscale cluster and collapse the cluster by thermal dissociation to isolate the desired material. While molecular clusters have been used to template a growing nanocrystal, the use of a mesoscale template to form the desired nanocrystal has not been demonstrated. Prussian blue analogues (PBAs) have been well studied by multiple research groups and offer a mesoscale cluster framework that can be collapsed to binary alloys. Iron-cobalt carbide and iron-cobalt nanoparticles were generated through thermal decomposition of the PBA. The resultant particles were characterized by pXRD, TEM, FT-IR, and SQUID.

69. *Partnerships in Crime: Protecting American Businesses from Cyber Crimes*
Nathen Mergen, Katherine Ray and Dean Thomas Blomberg, Florida State University

The purpose of the current study is to develop a business profile that documents the specific types of businesses that are at risk to cyber crimes targeting intellectual property, and to outline business practices which may be employed to prevent such crimes. Victims of intellectual property theft suffer vast financial losses as a result of patent infringement, leading to a loss of jobs in US based companies and an overall detriment to the economy. Furthermore, the public opinion downfall after a hack leads to low consumer confidence in a company's services, again resulting in a loss of revenue and jobs. Thus, it is imperative that businesses are aware of the risk of intellectual property crime, and strategies that can be used to safeguard themselves from such crime. The current study will identify various modes of IP theft and discern the modes most likely to be used against specific businesses. It will also determine the type of businesses most likely to be targeted (i.e. small local businesses v. large multinational corporations), offender characteristics, and methods of protection. This study will utilize material (i.e. academic, news, government articles) that focus on past instances of IP theft, methods used to gain access to corporate systems, the justice system's and market's reaction to the cyber-theft of intellectual property and the effectiveness of current protection strategies.

70. *Urban Landscape Features Affect Patterns of Co-Occurrence of the Red Imported Fire Ant (Solenopsis invicta) and the Argentine Ant (Linepithema humile)*
Abigail Pierre and Joshua King, University of Central Florida

Current work to determine the distribution, diet, and density of ants in suburban and urban areas in central Florida. The purpose of the project is to determine what features of the landscape and associated abiotic conditions (temperature, moisture) are associated with the presence of fire ants (*Solenopsis invicta*) and Argentine ant (*Linepithema humile*) and if these species have dietary differences in the areas where they co-occur. Approximately 60 sample areas total around the UCF campus and sites in the area surrounding campus will be sampled. Data collection consists of using bait tube arrays to attract ants and taking ground temperature and moisture measurements. Baits are laid down one test tube of sugar per point. Eight baits in total per location. Temperature and soil moisture are taken using a digital soil probe and moisture meter. Landscape features (e.g. groundcover) is recorded. The identity and abundance of ants are recorded. Data will be analyzed in a multiple regression modeling framework to determine relationships among ant species presence and abundance, abiotic conditions, and landscape features. The goal of this project is to provide key information about the factors underlying the co-occurrence of important exotic ants in central Florida and how landscape features such as landscaping and urban development may be contributing to their success.

71. *Animal Familiars in Early Modern England*

Stephanie Pinargote and Molly Hand, Florida State University

The research current research is concerned with animal familiars and how they were perceived in early modern England. We are specifically arguing that witchcraft crimes were, at the heart, animal crimes, while also exploring various aspects of familiars. These include the mutualistic relationship between witches and their familiars, how the familiar was perceived as related to the devil in treatises and other texts, how familiars were portrayed in plays and theatre, along with how animal familiars are shown in modern works and in popular culture. By analyzing secondary and primary accounts of witches and witchcraft, we are compiling quotes and excerpts directly concerned with animal familiars and how they were responsible for various aspects of these accusations and incidents. We are also looking at works that may not be centered around our subject, but do provide some insight on the witch's companion. This is a topic less explored—typically, studies concerned with witchcraft often look at, understandingly, the women involved in the accusations and accounts and how these trials impacted their lives and well-being. With this study, we hope to show how important animal familiars were and to highlight specific, diverse examples of their impact. Our end goal is to develop a formal compilation of our arguments and analyses.

72. *Human Population Size: An Important Predictor of Alligator Attack Rates in Florida Using Linear and Stepwise Regression*

Morgan Golden-Ebanks and Adam Rosenblatt, University of North Florida

In modern developed nations people encounter large predators infrequently, but human-predator conflicts still occur. In Florida there is widespread fear of American alligators though attacks are rare, and much of the fear stems from misinformation and sensationalized media reports. Understanding the true causes of alligator attacks is therefore critical for preventing human-alligator conflict and properly educating the public. Recent media reports have suggested that warming temperatures associated with climate change are leading to increased frequency in alligator attacks because alligator activity tends to increase as temperatures rise during the summer months. However, analyses of the relative effects of different factors on alligator attack rates are sparse. Using attack rates, human and alligator population data, and climate trends from 1988-2016, we conducted a study using linear and stepwise regression to determine which factors could potentially be driving alligator attacks in Florida. The results showed that human population size was the most important predictor of alligator attack rates while temperature and precipitation had little effect. These results suggest that as human populations in Florida grow and move into alligator habitat, more interactions will occur simply because of human-alligator proximity rather than shifting climate patterns. Future research is needed to confirm this state-level trend at the county level, thereby encouraging local public education initiatives to limit human-alligator conflict in areas where the two populations overlap.

73. *Are High Self-Monitors Genuine?: A Study of Self-Monitoring and Authenticity*
Diego Prato, Michael Yoho and Christopher Leone, University of North Florida

High self-monitoring individuals tend to adapt the way they behave to fit their environment, whereas individuals low in self-monitoring tend to act consistently across situations (see Fuglestad & Snyder, 2010, for a review of the literature). Furthermore, high self-monitoring individuals may be divided into two types: acquisitive, who manage impressions to acquire status; and protective, who manage impressions to avoid losing status. Because the strategic self-presentation that characterizes high self-monitors may sometimes be understood as inauthenticity (Kernis & Paradise, 2003), in this study we assessed the relationship between self-monitoring and authenticity, while controlling for contingent self-esteem as a potential third variable. In two studies, participants completed the Authenticity Inventory (Goldman & Kernis, 2004), the 25-item Self-Monitoring Scale (Snyder, 1974), and a 15-item Contingent Self-Esteem Scale (Kernis & Paradise, 2003). Although the acquisitive type of self-monitoring was not related to authenticity, the protective type was related to inauthenticity. Additionally, protective self-monitoring was related to contingent self-esteem. However, the relationship between protective self-monitoring and inauthenticity remained robust after controlling for contingent self-esteem. Although the relationship is clear for the purposes of this study, authenticity has been framed in terms of a traditional view of the self that considers the self as stable across time and settings. This framing may ignore the nature of the self as a collection of situated identities used in different times and contexts.

74. *Withaferin A (WA) Reduces Disease Associated Variants of Alpha-Synuclein In Cellular Models*
Natasha Ram, Malathi Narayan and Umesh Jinwal, University of South Florida

Withaferin A (WA) reduces disease associated variants of alpha-synuclein in cellular models Alpha synuclein protein is a major component of abnormal filaments in Parkinson's disease (PD) and many other neurodegenerative diseases collectively called synucleopathies. It is predominantly found as Lewy bodies and Lewy neurites in nerve and glial cells. Increase of alpha synuclein inclusions in cytoplasm have been observed in PD and Dementia with Lewy bodies (DLB). Hence, we aimed to find a novel synuclein-targeting drug that can be used for treatment of PD and other synucleinopathies. Transfectants of M17 neuroblastoma cells that expressed alpha synuclein variants were treated with withaferin A or a vehicle control, for 24 hours. Western blotting was used to analyze cell lysates post-treatment. To determine how WA regulated the alpha-synuclein pathways, autophagy and proteosomal pathway inhibitors were used in the treatments. Knockdown studies were performed using siRNA. Localization studies performed using immunofluorescence technique. WA treatment led to reduction of wildtype or A30P, E46K and A53T point mutants of α-synuclein. Proteasomal and autophagy pathway inhibitors study showed WA reduces α-synuclein through synergistic action of both pathways. Immunofluorescence analysis showed WA treatment leads to nuclear localization of α-synuclein. In addition, knockdown studies showed p62 protein's involvement in WA mediated alpha-synuclein reduction. Utilizing cellular models of

synucleinopathy, we found WA treatment leads to significant reduction in alpha-synuclein. Furthermore, we found p62 protein may play a role in WA mediated reduction of alpha-synuclein. Overall, our data suggests Withaferin A could serve as a potential drug for treatment of synucleopathies.

75. *Modeling Cholera Dynamics in Haiti: The Effects of Interventions on Reducing Epidemic Outbreaks*

Hanna Reed and Zhisheng Shuai, University of Central Florida

Cholera is a devastating water-borne infection caused by the bacteria *Vibrio cholerae*. For years, the people of Haiti have experienced a multitude of infections despite aid campaigns and education programs that have been administered. Due to the nature of the infection, we investigate the impact that proper sanitation and hygiene have on the dynamics of the disease. There are many mathematical models which try to address cholera epidemics. We propose a modified SIRB model that theoretically explores the implications of intervention campaigns on the endemic disease equilibrium of cholera in Haiti. We investigate what proportion of the population would need to be practicing proper hygiene, sanitation, and disease-avoidant behavior for the cholera epidemic to dissipate. With effective health interventions: individuals coming into contact and subsequently contracting cholera should decrease; mortalities due to improper or inadequate treatment of cholera should decrease; individuals participating in bacterial shedding to the water compartment should decrease. The objective of the model is to discover a threshold of the population that intervention campaigns need to reach to significantly reduce the endemic disease equilibrium or to achieve a disease-free state. Simulations revealed a threshold that exists, with approximately 68 percent of the population receiving or practicing intervention measures, resulting in the elimination of cholera in Haiti. These results provide a quantitative goal for intervention programs to target in order to eliminate the disease or to reduce the morbidity and mortality of cholera epidemics in Haiti.

76. *About Face: Antecedents of Perceptions About Men's Facial Hair*

Eilidh Watson, Jasmine Gonzalez, Mark Hodae, David Hall, Kelly Hall and Randy Croom, Stetson University

We build on research previously presented at FURC by members of our research team. We investigated how men's facial hair influences perceptions of professionalism, trustworthiness, and intelligence. We found that 1) 88.1% of Fortune 500 CEOs have no facial hair, and that facial hair reduces the degree to which men are perceived as professional, trustworthy, and intelligence. The prior study had two limitations that we address here: 1) the photos included only men who were Caucasian in appearance , thus failing to take into account possible difference of cultural expectations. 2) Study 1 did not consider factors about the individuals who made evaluations, failing to take into account factors that might help explain how individuals form perceptions of men's facial hair. In this followup study, we address these limitations in two ways: first, we include evaluations of black men as well as Caucasian men, and 2, we take into account individual differences

of the raters, including conservatism, trust, need for order and cleanliness, need for conformity, and cautiousness.

77. *Stereotype*

Ricder Ricardo and Sheila Goloborotko, University of North Florida

ster·e·o·type is a series of three-dimensional sculptural pieces where painting is applied on top of digital photos and digital collages. In this series, I create self-portraits reflecting my state of mind during the turbulent times in America with president Trump. Since these political changes and uncertainties directly affect me as an immigrant, in this work I illustrate how fragmented, voiceless and hopeless I feel as our human rights are stripped away by our own government. These senseless governmental decisions affect my family members and friends most from different nationalities, ethnic, social and economic background. In some sculptural pieces using fragmented parts of the body I construct a raw self-portrait of what it means to be a Cuban-American immigrant in the permanent exile of my country of birth. In others, portraits from immigrants of many other nations, are developed as landscapes where each immigrant is associated with stereotypical imagery and preconceived notions. These portraits are representational metaphors of each person and the way they are perceived. For this project proposal I plan to work with individuals from additional minority groups directly affected by stereotypical associations. Once portraits are shot I plan to work on photoshop to enhance, fragment, and overlap imagery creating a digital collage. These collages will then be digitally printed and combined with overlying painting of images connected to each persons' sterotypes. As a final step these portraits are mounted on recycled wood and each one is hand cut as a silhouette using a jigsaw.

78. *Bobwhite Quail Neonates Can Use Olfactory Cues to Direct Spatial Exploration*

Chelsy Obrer, Starlie Belnap and Robert Lickliter, Florida International University

Most research on early perceptual development in precocial birds has focused on chicks' auditory and visual responsiveness. Olfactory responsiveness has received little research attention, as precocial birds were thought to have limited olfactory abilities in the days and weeks following hatching. However, in recent years this belief has been questioned, as olfactory cues may help in food and nest location, predator detection, navigation, and kin identification. This study investigated whether bobwhite quail (*Colinus virginianus*) neonates could detect and demonstrate a preference for an olfactory stimulus in a simultaneous choice test. Two-day-old naïve hatchlings were tested in a paired scent choice task within an I-maze. Strawberry, almond, or vanilla-scented cotton balls were paired with an odorless cotton ball at opposite ends of the maze. Results indicated quail neonates could detect and differentiate scented cotton balls from the unscented cotton ball, and discriminate between the three scents; a Wilcoxon signed rank test revealed chicks spend more time near the strawberry stimulus ($p = 0.041$) and less time near the almond stimulus ($p = 0.018$) than the unscented one during testing. These findings suggest that young quail chicks can use olfactory cues to direct their spatial exploration in the days following hatching and that this olfactory sensitivity may be more developed at hatch than previously thought. This preliminary study is the first in a series designed to examine how

prenatal chemosensory experience may facilitate postnatal olfactory responsiveness and how such responsiveness may affect the efficiency of other senses and peer recognition following hatching.

79. *Sex or SES? Attitudes About Child Sexual Abuse as a Function of Perpetrators' Attributes*
Alet Robert, Mary Geary, Ashley Jacoby, Christopher Leone, and Louanne Hawkins, University of North Florida

Media bias perpetuates sex stereotypes of perpetrators of child-sexual abuse (Cromer & Goldsmith 2010; Rogers & Davies, 2007). Prototypical male perpetrators are portrayed as low in SES; prototypical female perpetrators are portrayed as high in SES. We investigated individuals' attitudes toward an adult-minor sexual encounter in which we systematically varied the sex and socioeconomic status of an adult as well as the sex of a minor. We are asking 100 male and 100 female undergraduates to read a scenario similar to everyday news reports. Half the adults are being described as having a high socioeconomic status (i.e., having a master's degree and working for a Fortune-500 company); half are being described as having a low socioeconomic status (i.e., having a high school education and working for a local cleaning company). Sex of adults and minors are being counterbalanced within each level of socioeconomic status. We are asking participants' attitudes about the encounter as a whole, the adult perpetrator, and the minor victims using three Semantic Differential Scales (Osgood, Suci, & Tannenbaum, 1957). Data collection is complete for female but not male participants. For each measure, we will test our hypotheses using a 2 (Adults' SES) x 2 (Adults' Sex) x 2 (Minors' Sex) ANOVA. We anticipate that participants will have the least negative attitudes about sexual abuse perpetrated by a high socioeconomic status female adult on a male minor and the most negative attitudes about a low socioeconomic status male adult on a female minor.

80. *Perfect Muscle Regeneration in the African Spiny Mouse (Acomys)*
Aaron Sandoval, Jason Brant and Malcolm Maden, University of Florida

In humans and most mammals, a scar remains even after a wound has healed completely. Scars are generally an inevitable consequence of tissue repair. However, the African spiny mouse (*Acomys*) is the only known adult mammal in the world that is capable of scar-free regeneration. *Acomys* has exhibited perfect regeneration of skin following excision or burn wounds and cardiac tissue following heart attacks as well as improved regeneration of spinal cord following crush injuries. The regenerative capabilities of *Acomys* are being studied by comparing it to a normal lab mouse (*Mus*). After an ear wound, *Acomys* fully regenerated hair, fat, cartilage, oil glands, and, most notably, skeletal muscle. To further study *Acomys*' muscle regeneration abilities, we focused on the tibialis anterior, a leg muscle also found in humans. The muscles of both *Acomys* and Mus were injected with snake venom to induce a wounding response. After giving the mice 3 weeks to heal, they were injected again. This was repeated for a total of 5 injections with 3 weeks between each injection. Afterwards, the muscles were harvested, placed on slides, and stained. In *Acomys*, the muscles regenerated almost perfectly. In Mus, however, high amounts of scarring were observed. Furthermore, we noticed that many fat cells had appeared in the muscle. This finding was unexpected, but strikingly similar to humans who suffer from

Duchenne Muscular Dystrophy and have their muscle cells replaced by fat cells. Continued study of *Acomys* will help us to better understand this debilitating disease and regeneration overall.

81. *The Impact of Epigallocatechin-3-Gallate (EGCG) On Ts65dn Down Syndrome Mouse Models*

Nicole Santana and John Starbuck, University of Central Florida

Down syndrome is caused by trisomy 21 which produces a unique craniofacial phenotype. The purpose of this research is to better understand how the Dyrk1a gene, which is triplicated in DS, influences the development of craniofacial phenotypes. Ts65Dn mice have been genetically modified to have 3 copies of numerous genes found on human chromosome 21 including Dyrk1a, which plays a role in bone and brain development. For this study, pregnant Ts65Dn mice were treated with 200 mg/kg of Epigallocatechin-3-gallate (ECGC) twice daily on days 7 and 8 of pregnancy. EGCG is a known inhibitor of Dyrk1a activity and it was hypothesized that EGCG treatment will improve reduction of Dyrk1a overexpression and improve craniofacial morphology. We hope to determine how strong of a role Dyrk1a plays in skull development and whether or not this treatment may improve these overexpressions. To test this hypothesis three samples were analyzed: Ts65Dn, Ts65Dn + EGCG, and euploid. Skulls were imaged using high-resolution µCT at 6 weeks after birth, coordinates of landmarks were acquired from images using Amira software and used to assess craniofacial shape using a Euclidean Distance Matrix Analysis. Results show that EGCG improves craniofacial morphology relative to untreated baselines although improvements vary based on regions of the vault, face, base, or mandible. Being able to understand how Dyrk1a influences craniofacial development is the first step in finding a way to improve phenotypic development to potentially avoid health issues associated with DS. These results suggest that Dyrk1a plays an important role in craniofacial morphogenesis.

82. *Tensile-Compressive Asymmetry and Anisotropy of Fused Deposition Modeling PLA Under Monotonic Conditions*

Aaron Santomauro and Ali Gordon, University of Central Florida

Additive Manufacturing (AM) continues to gain popularity for its ability to produce complexly-shaped final use components that are impractical to manufacture by traditional methods; however, additive manufactured parts contain complex mesostructures that result in directionally-dependent mechanical properties that have yet to be fully characterized. This effort demonstrates a framework of experimental and analytical methods needed to characterize the uniaxial monotonic behavior of fused deposition modeling PLA using tensile and compressive experiments on specimens printed at various orientations. Based on experimental results, the asymmetry and anisotropy of tensile and compressive response were analyzed for a candidate material. Specimens from different orientations underwent microscopy and failure surface analysis to correlate test data. The material was observed to exhibit tetragonal behavior with tensile-compressive asymmetry.

83. *The Size of The SRC Effect as a Function of The Amount of Correspondence Between Stimulus and Response*

Jess Semple and Debbie Wang, University of North Florida

The action-concept model proposes that upon completing a task, we develop a neurocognitive code that automatically associates the stimuli, action, and consequences of that action. Then, when presented with the initial stimuli, the action is carried out with little cognitive effort. Experiments with the Simon effect have proven that reaction time (RT) is faster when spatial stimulus features are corresponding, rather then when they are not. This effect has also been found regardless of a spatial relationship, with stimulus features such as pitch. The advantage in RT when stimuli are corresponding is called the stimulus-response correspondence (SRC) effect. Following the action-concept model and the SRC effect, the present research aims to determine how the amount of irrelevant stimuli affect the size of the SRC effect. We systematically varied the amount of irrelevant auditory and visuospatial stimuli while maintaining consistent temporal relationships between stimuli. It was expected to witness a positive relationship between the amount of corresponding stimuli and the size of the SRC effect, and a negative relationship between the amount of non-corresponding stimuli and the size of the SRC effect.

84. *The Role of Estrogen in the Inflammatory Profile of Patients with Localized Aggressive Periodontitis*

Tamara Tavakoli and Luciana Shaddox, University of Florida

The occurrence of localized aggressive periodontitis (LAP) in sex has been largely divisive, with some studies suggesting a higher prevalence in females. The objective of this study was to evaluate the relationship between estrogen in clinical parameters and the levels of cyto/chemokines in peripheral blood response to identify the potential role of estrogen in the inflammatory profiles of LAP female patients compared to healthy female patients. Methods: Peripheral blood from 10 female African-American participants, aged 13 to 15, free of systemic diseases, and diagnosed with LAP were collected. Blood was stimulated with ultrapure LPS from *Escherichia coli* (Ec) and Luminex assays were used to quantify levels of 14 cyto/chemokines. Serum estradiol levels were quantified using an ELISA. Results: There was a difference between LAP and healthy females in number of pocket depth over 4mm ($p=0.0019$), percent of pocket depth over 4mm ($p=0.0029$), and mean clinical attachment loss ($p<0.0001$). Estradiol in LAP females correlate positively with the number of pocket depth over 4mm ($p=0.033$) and percent of pocket depth over 4mm ($p=0.035$). Healthy females' estradiol levels correlate negatively with eotaxin ($p=0.04$), IL-6 ($p=0.01$), IL-12p40 ($p=0.04$), IL-12p70 ($p=0.05$), MCP-1 ($p=0.03$), and TNFa ($p=0.02$). LAP females' estradiol levels correlate negatively with IL-12p70 ($p=0.04$). Conclusions: The LAP females' estradiol levels could play a role in the etiological effects of inflammation in females. Further studies need to be conducted, however, to determine the specific role and mechanisms by which sex hormones influences the inflammatory response in these patients.

85. *A Socio-Linguistic Analysis of African-American Vernacular English At UF*
Elisabeth Rios-Brooks, John Krigbaum, University of Florida

Is African-American Vernacular English (AAVE) used as a tool for power in the African American community at UF to claim identity and cultural relevance? This project argues that language is an important factor in gaining social and cultural capital in communities where people are otherwise excluded or marginalized due to cultural differences (Bourdieu, 1991). AAVE can establish collective identities within African-American communities. The objective of this project is to draw attention to the cultural legitimacy of AAVE as a dialect in the African-American community at UF. Research shows that AAVE impacts students at universities both culturally and linguistically. (Cox, 2008). Understanding how AAVE is used provides insight into the lives and African-American students. The methodologies employed in this investigation include open-ended interviews and online surveys, which focus on self-identification, and how language is used in day-to-day social contexts. Organizations and clubs serve as a platform for African-American students to foster a collective cultural identity, tied together through the use of AAVE (Abrahams, 1972). Snowball sampling revealed students within organizations, created for minorities, have developed intimate cultural connections through overlapping linguistics communities. Preliminary results indicate there is a cultural stigma surrounding the use of AAVE in formal settings (i.e. within the collegiate level, job interviews, and others). This further shows the deep seated social control within collegiate settings that subjugates and dampens linguistic diversity. Moving forward, it is important to create spaces for different linguistic identities to coexist in a leveled playing field where all languages and dialects are treated equally.

86. *Urban Agriculture*
Kyrsteen Webster, Aleczander Lane, Ryan Martin, and Lisa Piazza, University of South Florida

World population growth and nations transitioning into more “American” style diets are more ubiquitous than ever. This fact puts a lot of strain on the demand of food and water. The goal of this paper is to provide enough information on how we can solve some of these issues through urban agriculture. By turning large scale farming into a more sustainable regional system through zoning policy and education we can, as a society, become more connected with the land in an urban world. While we explain some of the historical events that got us into this current situation, the primary focus will be to examine issues we face transporting and storing a global food system; policies benefiting or hurting the local urban farmer; potential yields and limitations with urban agriculture. With the current immigration crises, partisan public policy disagreements, and a public focused on other issues such as health care America and other developed nations have lost sight to some of the problems within their own food sources. There are studies where we found poor communities pulling together and becoming stronger through urban agriculture and studies where it was extremely expensive to maintain agriculture practices in the area. We bring forth models and policies that support this shift in agriculture by taking our first steps in the classroom and providing an education to the public.

87. *Recommended Interventions for Improving Cardiovascular Disease and Diabetes Outcomes Based on Mapping Similar Sociodemographic Factors within Volusia County Zip Codes Containing High Prevalence of Hospitalizations and Emergency Department Visits*

Derek Weimer, Stacey Odoi, Brianna Lopes, and Laura Gunn, Stetson University

Lives are lost daily to cardiovascular disease (CVD) and diabetes. Within the United States, these chronic diseases are among the 10 leading causes of death, with heart disease and stroke ranked numbers one and five, respectively, and diabetes mellitus ranked number seven. The 2016 Volusia Community Health Needs Assessment identifies these diseases among five priority health issues. A literature review was conducted to identify effective interventions, based on significant p-values (<0.05) and 95% confidence intervals, focused on health outcomes related to CVD and diabetes using the following databases: Centers for Disease Control and Prevention Community Health Improvement Navigator Database of Interventions; Cochrane Collaboration Database of Systematic Reviews; and PubMed. International Classification of Diseases (ICD) diagnosis codes were identified corresponding to CVD and diabetes. Analyses of population-level hospitalization and emergency department (ED) visit data for 2014-2016 were performed, using the aforementioned ICD codes, at the Florida Department of Health in Volusia County (FDOH-Volusia). A mapping was completed of zip codes with a high prevalence of CVD and diabetes-related hospitalizations and ED visits to assess the sociodemographic profile of these zip codes in order to identify which intervention(s), with relatively similar sociodemographic profiles based on participants' race/ethnicity, age, gender, and income level, could be recommended for adoption within these Volusia zip codes. Seventeen interventions were recommended to FDOH-Volusia and One Voice for Volusia, based upon results and literature synthesis, for adoption in Volusia zip codes with similar sociodemographic profiles. This research has potential for improving diabetes and CVD-related outcomes among Volusia residents.

88. *State Anxiety Promotes Social Cognitive Responses to Disease Threat*

Nicholas Zovath and Sarah Ainsworth, University of North Florida

Anxiety is an unpleasant, yet inescapable, aspect of human life. When coupled with the perception of specific threat cues, anxiety can promote highly functional responses designed to mitigate those threats. In the current research, we examined the associations between anxiety and psychological responses designed to reduce the threat of contagious disease. Across three studies, high state levels of anxiety were associated with disease avoidant cognition, but only when disease cues were salient. Anxiety was associated with prejudice toward a group heuristically associated with disease (Studies 2-3) and with perceptions of personal risks of contracting an infectious disease (Study 1). This pattern held only when the presence of disease cues was manipulated experimentally (Studies 1-2) and among people recovering from a recent illness (Study 3). Findings shed light on the processes by which general anxiety manifests in specific threat-management strategies. Results also highlight anxiety as an important contributor to intergroup prejudice.

89. *HIV Testing Barriers Within the Caucasian and Multi-Racial UCF Community*
Alyse Hurwit and Su-I Hou, University of Central Florida

This study analyzes the White/Caucasian and Multi-Racial populations and interprets reasons for HIV testing barriers amongst the students of UCF. The influence of relationship statuses also plays an inclusive role in this study. The data was documented through a web-based survey and taken by UCF college students. The most popular barrier for HIV testing was "No Barrier" (W 71%, MR 76%). The Caucasian individuals in an Engaged/Married relationship had the highest frequency within the "No Barriers" category with 97.37%. The barriers conducted in this study were No Barriers, Testing Anxiety, Resources, Lack of Testing Related Knowledge, and Social Stigma. The shared logistic analyses were high trust in sexual partners, fear of rejection, fear of positive results, cost, time and availability, etc. People in committed relationships were more reluctant to HIV testing than singles. Individuals in single or friends with benefits relationships seemed to develop a trust of "word of mouth" from their sexual partners. Those who identified as "Other" had responses that varied. The Multi-Racial population was much smaller than the White population. People can identify themselves as the race that they feel most dominant to them. Relationship status was analyzed, because individuals in specific relationships tend to have different opinions on HIV testing barriers. This is paramount in analyzing the demographics and understanding why "No Barriers" was the most popular survey response. Knowing these demographics can further assist future research by comparing them to the frequencies of individuals who actually contract the HIV virus.

90. *Taxonomical Investigation Through DNA Barcoding*
Babita Samaroo and Nalini Odapalli, Valencia College

Molecular Biology Research, Valencia College, West Campus Research Assistant: Justin Santiago Professor: Nalini Odapalli Taxonomical Investigation Through DNA Barcoding With our world's ever-changing atmosphere comes a rise in the destruction of habitats of millions of species. This fact, along with the need to identify and preserve biological diversity has driven researchers to devise a way that would allow almost anyone to classify species from even the smallest amount of material. Through DNA barcoding, analysts can determine the classification of living things by examining the pattern of a DNA sequence of as short in length as 500-700 base pairs that is unique to each specimen. The objective of this experiment is to investigate the morphological taxonomy of plants at Valencia College by extracting and isolating the DNA and subsequently amplifying the rbcl gene through PCR. Gel electrophoresis was then used to analyze the PCR products, that was viewed by using UV light. Utilizing online databases and BLAST, the established forward and reverse primers of the rbcl gene was matched to stored known sequences. Finally, these barcodes were inputted into the bioinformatics system of DNA Subway which paired the unknown DNA sequences to already classified species allowing its identification through morphological analysis.

91. *The Useful and Wasted Work Potential from Advanced Combustion using a Zero-Dimensional Numerical Model*
Justin White, Chris Tenore and John Nuszkowski, University of North Florida

Advanced combustion strategies utilize in-cylinder combustion control techniques to meet regulated exhaust emissions levels while retaining high thermal efficiency. Recently, more efforts has been made in conducting a second law analysis of combustion events. Most studies into the combustion events of different individual engines produce supplementary results, but little research has focused on comparing the results of the varying combustion methods. Most studies include a second law analysis, but comparison between studies is inconclusive due to varying engine parameters. Mathematical models were utilized to simulate the in-cylinder combustion process to examine the available work associated with common and advanced combustion modes. The in-cylinder heat release models were derived using a single or double Wiebe function in conjunction with the Woschni correlation for wall heat transfer. Engine parameters were normalized and, when necessary, specific engine operation parameters were based on current research. Proper engine operation conditions were verified from pressure and temperature calculations with respect to crank angle. Peak pressures and burn angles were adjusted by altering shape factors, slow burn fractions, and combustion duration. The useful and wasted work potential from the combustion modes of spark-ignited (SI), compression-ignition (CI), homogeneous charge compression ignition (HCCI), and premix charged compression ignition (PCCI) were examined. The results showed that the total change in work potential was highly dependent on the achievable engine operating parameters for the combustion mode type such as compression ratio, start of combustion, and combustion duration.

92. *Targeted Delivery of a Therapeutic Protein for Neurodegenerative Diseases*
Heather Holman and Kiminobu Sugaya, University of Central Florida

Neurodegenerative diseases such as Parkinson's and Alzheimer's are linked to mitochondrial dysfunction and the underexpression of TOM40, a protein with chaperone-like qualities that is responsible for transporting precursor proteins into the mitochondria. Overexpression of TOM40 is reported to partially restore mitochondrial dysfunction and decreases the accumulation of neurotoxic aggregates of α-synuclein. Our goal is to develop an effective method for delivery of TOM40 protein to the brain. Previous studies have used lentiviruses to carry TOM40 into the hippocampus of α-synuclein transgenic mice. The disadvantage of lentiviral transfection is the random insertions of the target gene into host genome, which could cause toxic effects. Synthetic phospholipid vesicles containing TOM40 were considered as an alternative delivery method, but these "liposomes" elicit not only toxicity, but also an immune response. Thus, development of a safer delivery method of TOM40 protein is needed. We investigated exosomes, which are extracellular vesicles originating from multivesicular endosomes filled with protein, lipid, or RNA cargoes for cell-cell communication. Since exosomes are created from host cells, they are non-immunogenic and may be a more desirable method. Expression constructs have been made for the production of TOM40 protein within or on the surface of exosomes. In order to target the delivery of TOM40 to the brain, we attached peptides to the surface of the exosomes, which specifically interact with receptors on neural cells.

We are optimizing the efficiency of this unique delivery method with in vitro human neural cell cultures followed by in vivo studies with transgenic disease model mice.

93. *Defining the role master regulators of virulence factors play in Mycobacterium abscessus*
George Walters-Marrah and Kyle Rohde, University of Central Florida

Mycobacterium abscessus (Mab) is an environmental microbe that is pervasive in bodies of water, decomposing vegetation, and urban water sources. It has quickly become known as the most infectious, persistent, and drug resistant of the rapid growing non-tuberculous mycobacteria. Mab can cause tuberculosis-like pulmonary infections, skin and traumatic wound infections. Currently, there is a shortage of potent antibiotics against Mab, and little is known about the molecular mechanisms underlying the ability of Mab to persist in the host. However, we can extrapolate discoveries about virulence mechanisms in the closely related pathogen Mycobacterium tuberculosis (Mtb) as a starting point. The two-component systems (2CS), DosRS and PhoPR, are crucial in the ability of Mtb to cause disease. DosRS and PhoPR regulate gene expression within Mtb via sensing of hypoxia and acidic pH, respectively. Homologs of DosRS and PhoPR have been confirmed to be present in Mab, but their respective regulons are currently unanalyzed. The project objective is to discover virulence factors that allow Mab to persist within the body, avoid clearance by the immune system, and resist antibiotic therapy. To accomplish this, we will take a genetic approach involving targeted gene deletions and comparison of knockout strain gene expression under relevant stress conditions, such as phagocytosis by macrophages. The genes of the DosR and PhoP regulon will be uncovered and tested for importance in Mab pathogenesis. Further experimentation on Mab virulence factors could possibly give rise to new, effective antibiotics.