

Poster Session 4

1. *A Comparison of Cell Adhesion Molecule Expression in The Olfactory Bulbs of Male and Female Mice*

Abigail Tompa and Judith Ochrietor, University of North Florida

Neurons require significant amounts of energy for cellular functions. Transporter proteins, like those of monocarboxylate transporter (MCT) family, assist in bringing lactate across the plasma membrane, which is used as an energy source for neurons to fuel oxidative phosphorylation. Previous studies indicate that MCT expression is dependent upon the co-expression of cell adhesion molecules in the Basigin subset of the immunoglobulin superfamily. Members of that subset include Basigin, Embigin, and the Neuroplastin. In the mouse olfactory bulb, MCT2 and MCT4 expression overlaps that of Embigin and Neuroplastin, on neurons and glial cells. Sexual dimorphism is known to occur in the olfactory bulb, with females possessing more neurons and glial cells than males. Therefore, the purpose of the current study was to investigate sex differences in olfaction by measuring gene expression of Basigin, Neuroplastin, and Embigin in the olfactory bulb of male and female mice. RNA was isolated from olfactory bulbs of male and female mice at various ages and subjected to q-RT-PCR analyses using primers specific for Basigin, Embigin, and Neuroplastin. The results indicated a greater relative expression of Neuroplastin in comparison to the other molecules investigated. However, there was no significant difference in the expression of Basigin, Neuroplastin, or Embigin between male and female mice. The results indicate that expression of these proteins is not affected by the sexual dimorphism in olfaction. Future studies will investigate the expression of MCT2 and MCT4 to determine if differences in expression of those transporters are observed between males and females.

2. *Relationships Between Anxiety, Hormones, and Pubertal Developmental Stage In Adolescent Females*

Sierah Crisler and Alex Meyer, Florida State University

Previous literature has suggested a link between facets of pubertal development, such as pubertal stage and hormone levels, and anxiety. Beyond the current literature, few researchers have examined these factors as potential biological indicators of anxiety risk. Minimal research directly investigates relationships between puberty and the progression of certain types of anxiety. The current study utilized reports of the participant's pubertal developmental stage (PDS) and hormones and examined them, absent of age, to determine their effect on anxiety symptoms. Measures collected from 267 adolescent females ages 8 to 14 were included in the study. Levels of the hormones estrogen, testosterone, progesterone, and dehydroepiandrosterone (DHEA) were utilized, as well as self-reported and parent-reported PDS and adolescent anxiety symptoms as assessed by the Screen for Child Anxiety Related Emotional Disorders (SCARED). Relationships between SCARED symptoms, PDS, and hormones were examined by calculating partial correlations controlling for age. PDS strongly correlated with parent- and child-SCARED total scores. Of the hormones tested, child- and parent-reported SCARED scores related most to DHEA. SCARED subscales were analyzed using a regression to determine which subscale related most to an overall "pubertal development" variable for both the parent

and child. The regressions specified panic as the parent-reported subscale that related most to pubertal development, while child-reported generalized anxiety related most to pubertal development. Additional research is necessary to establish if pinpointing biological risk factors for anxiety during puberty can be utilized to implement early intervention efforts for adolescents at high risk.

3. *The Relationship Between Social Media Use and Cheating Behaviors in Relationships*
Memona Zafar, Elizabeth Koblar and Mustapha Mouloua, University of Central Florida

As the use of Social Networking Sites (SNSs) has increased in the past decade, more and more aspects of individuals' lives have become part of social media. SNSs make it easier than ever to remain in contact with ex-partners, view and comment on photographs, and exchange private messages (Cravens, Leckie, & Whiting, 2013; Clayton, Nagurney, & Smith, 2013). This study was designed to examine the relationship between SNS use and infidelity among college students. Researchers hypothesized that SNS use would be related to infidelity and cheating behaviors in relationships. Three hundred and one college students (117 males, 182 females, and 2 participants classifying themselves as other, with an SD of .975) participated in this study. Participants ranged between 18 and 50 years of age, with a mean of 21.3 years and a SD of 3.795 years. All participants completed the same questionnaire, which included a standard demographic survey and questions, designed by the researchers, regarding their social media use, history with infidelity, and their opinions on what "infidelity" means. While results did not support the original hypothesis, this study did reveal several significant findings, including that participants were more likely to leave their partner when infidelity involved social media [$r(301) = .133, p > .05$]. This study's results help to better understand the role that SNSs play in romantic relationships and infidelity.

4. *How Does Age and Political Affiliation Affect the Perception of Credibility Towards News Media Outlets*
Douglas Speed, Garrett Cox and Monica Escaleras, Florida Atlantic University

As of recently, the believability and reputation of news outlets have come into question. With the election of Donald Trump as President, the term "fake news" has walked hand in hand with notable news sources such as CNN, Fox News and MSNBC. The more allegations that follow result in more questions arising regarding the legitimacy of some of our most historical news outlets. With legitimacy coming into question, individuals must look to alternative sources for their news. This leads to a new search for reliable information, a changing of channels for some, a complete change of platform for others. The purpose of our study is to analyze age and its connection, if any, to the platforms that individuals decide to receive their news information on. To test this we conducted an online survey of over 500 people on a national scale, asking specific questions regarding trust in the media and the deliverance of news information. We found that these two variables are statistically significant. Our research shows that people in lower age demographics tend to receive their news information online as opposed to older age demographics electing to receive their news information through the television.

5. *Effective Interventions Recommended to Improve Youth Behavioral and Mental Health Outcomes Based on Mapping Sociodemographic Factors within Volusia County Zip Codes with High Incidence of Hospitalizations and Emergency Department Visits*
Monica Fies, Amelia Ballesteros and Laura Gunn, Stetson University

Public Health focuses on preventing disease and promoting health through collaborative efforts, extensive research, and evidence-based practice. Youth behavioral and mental health is one of five priority public health indicators recognized in Volusia County's current Community Health Needs Assessment, published in 2016, and it is the primary focus of this research. From January to December of 2017, communication and collaboration occurred between students and a faculty mentor at Stetson University, and governmental officials at the Florida Department of Health in Volusia County (FDOH-Volusia). A literature review was conducted to identify 20 effective interventions which could be recommended for adoption within Volusia County, based on studies' p-values and/or 95% confidence intervals for related health outcomes. International Classification of Diseases (ICD) diagnosis codes were identified for health outcomes related to youth behavioral and mental health. Analyses, using these ICD codes, were performed at FDOH-Volusia on population-level hospitalization and emergency department (ED) visit data for the county between 2014-16. A mapping was conducted of effective interventions involving participants with similar sociodemographic profiles, to residents within Volusia County zip codes containing a high incidence of hospitalizations and ED visits related to youth behavioral and mental health problems. Recommendations for intervention implementation were made to the FDOH-Volusia in December 2017 based on the results of the mapping.

6. *The Use of ddPCR Technology to Track a Patient's Stage of Disease Utilizing Mutant Allele Frequencies*
Lauren Vaughn and Leylah Druskbosky, University of Florida

Unfortunately, 60% of myelodysplastic syndromes (MDS) patients fail to respond to standard of care therapy, and a majority of acute myeloid leukemia (AML) patients relapse after a period of remission. Minimal residual disease (MRD) is the main predictor of refractory leukemia following chemotherapy. In AML patients, mutant allele frequency (MAF) associates with future occurrence of relapse. Current clinical practices rely on painful bone marrow biopsies and light microscopy to monitor disease progression, remission, and relapse in hematological malignancies. Because of the bias in disease sampling and low sensitivity testing, there is an urgent need for a higher sensitivity test to monitor the tumor burden in these patients. This project will utilize a highly sensitive technology, droplet digital PCR (ddPCR), to quantify and track MAF in MDS and AML patients before, during and after chemotherapy treatment and/or bone marrow transplant. Quantification of MAF in peripheral blood (PB) and saliva samples will also be performed to determine feasibility of obtaining adequate leukemia DNA from less than 50 μ L blood. This method will provide a non-invasive means to monitor disease progression months before current clinical methods. Using ddPCR, we were able to track patient's MAF over a series of PB and saliva samples, showing their stages of disease

progression. The knowledge obtained from this study will help with disease monitoring by identifying the patients with highest risk of relapse, and defining the initial time points when their cancer is beginning to return.

7. *Preliminary Examination of Sexual Dimorphism in Northeast Florida Bottlenose Dolphins (*Tursiops truncatus*)*

Alexandra Veigas and Quincy Gibson, University of North Florida

Within bottlenose dolphins, sexual dimorphism varies in degree by population. Despite extensive morphometric analyses along the central east Florida coast, little has been done to examine dimorphism in northeast Florida (NEFL) dolphins. To bridge this gap, this study investigates absolute sexual dimorphism in total body length (TL) of stranded dolphins along the northeastern coast of Florida (Nassau to Volusia County) from March 2011 to November 2017. During each necropsy, standard morphometric and photographic data were collected from individuals classified as adults. Individuals without stranding coordinates, dorsal fin photographs, length measurements, or age classification were excluded from analyses. To determine if there was a difference between dolphins within the estuarine St. Johns River (SJR), and potential coastal ecotypes in this region, dorsal fins were compared to the University of North Florida's SJR catalog. To determine sexual dimorphism, total body length was compared between sexes and ecotypes using independent t-tests via SPSS Statistics v.22. When examining all dolphins stranded within NEFL, there was no statistically significant sex dimorphism (male: $\bar{x} = 258.27 \pm 2.22$; female: 251.20 ± 3.84 , $p = 0.098$) with females being 97.26% of male length. Additionally, there were no sex differences between SJR and coastal ecotypes, respectively (male: $\bar{x} = 260.50 \pm 3.28$, 257.19 ± 3.08 , $p = 0.508$; female: $\bar{x} = 251.17 \pm 6.07$, 248.25 ± 5.34 $p = 0.742$). Further analyses on proportional dimorphism is warranted to corroborate these findings.

8. *Cross-sectional Imaging Measurements of Visceral Fat Associate with Risk Factors of Urinary Stone Disease*

Emily Gansert and William Haley, University of North Florida

Kidney stone formers are at increased risk for chronic kidney disease (CKD) and linked with vascular diseases, metabolic syndrome, diabetes mellitus, hyperlipidemia, and obesity. Visceral fat, metabolic syndrome and urinary stone disease (USD) have all been associated with formation of kidney stones. Abnormal kidney function markers following first symptomatic stone events was recently reported. The relationship between visceral fat, kidney function and USD remains unclear. Our purpose was to assess cross-sectional imaging characteristics and estimate association of visceral fat with clinical characteristics. Computerized tomography scans of 333 incident symptomatic stone formers were analyzed; posterior fat distance and fat stranding (MAP), retroperitoneal fat thickness (RP), umbilical subcutaneous fat (SF), sagittal and transverse abdominal diameter (SAD, TAD) were measured. Associations of clinical characteristics with these visceral fat measures were assessed. The cohort was middle aged, predominantly white and overweight. Most exhibited one obstructing ureteral stone. Compared to the

contralateral kidney, RP, stranding, and MAP score were significantly higher. Adjusted for age and sex, SF, SAD, TAD, BMI associated with diabetes mellitus, hypertension, gout, and gastric bypass; lower serum bicarbonate and higher uric acid; and with higher urine chloride, phosphate, sodium, and lower pH. Higher serum creatinine was correlated with lower SF and BMI; cystatin C with SAD, TAD and BMI; urine total protein, albumin >5mg and CKD with SF, SAD, TAD, and BMI. Adjusted for age and sex, SAD and MAP associated with CKD, but not independent of BMI. Our findings suggest visceral fat measures are associated with clinical characteristics and kidney function markers following incident stone events.

9. *Not Your Grandma's Newspaper: An Investigation about College Students News Sources and Sites*

Mariyah Espinoza, Salvador Victor and William Berry, Bethune-Cookman University

United States college students are using more of their technological devices to receive the news. This study focused on the different types of online news sites and social media platforms that U.S. college students turn to most frequently when looking to be informed about current events and happenings. This research also assessed the challenges that the news industry faces because of dwindling audiences. The investigation used a convenience sample to survey college students with different majors, focusing on which online sites/social media they prefer to obtain their news. The study also investigated whether the students found social media news sources to be more or less credible than traditional newspapers and broadcast providers. The results showed that despite widespread assumptions that students do not wish to consume news, respondents stated that they preferred to access news from Twitter, Facebook, and Snapchat. This finding is consistent with a review of the literature that also showed the demand for news by college students has not gone away; it has only gone in a new direction. This research also found that most young adults are mobile news adopters; therefore, it may be more effective for traditional news outlets to start creating more online forums, frequent updates, webcasting, etc. The study showed the convenience of mobility and the value of content are what's driving U.S. college students to use their technology devices as the primary media outlet for news consumption.

10. *Investigation of Oncogenes Implicated in the Progression of Spontaneous Cancer-Inducing Mutations*

Luke Evans, Hannah Mays, Angie El-Said, Jil Shah, Emily Bradshaw and Alicia Hawthorne, University of Central Florida

Mutations in critical regulatory oncogenes can lead to aberrantly activated proteins, driving the onset of cancer development. The aim of this study was to investigate the frequency in which spontaneous mutations arise in oncogenes associated with various cancers. The oncogenes BRCA1, KIT, KRAS, and PTEN were selected for study due to their implications in breast, gastrointestinal, lung, and thyroid cancer. Two exons from each gene known to bear heightened mutation rates were chosen. Genomic DNA from

each of two clones of *Mus musculus* fibroblast L-cells and *Chlorocebus sabaeus* kidney fibroblast Cos7 cells were previously collected from every fifth passage, up to the fifteenth passage. Primers for candidate gene exons were designed to amplify the exons via polymerase chain reaction, and products were visualized via gel electrophoresis. Sanger sequencing was performed, and data for each clone and passage was compared to the original sequence from NCBI and to the other passages. Priming for Cos7 DNA was unsuccessful. For L-cell DNA, no spontaneous mutations were found in the passages or clones for the selected oncogenes. However, single nucleotide polymorphisms (SNPs) were identified. A SNP changing KIT's codon 590 valine to leucine in exon 11 was discovered. No amino acid change occurred for KRAS; however, a SNP was found at codon 32 of exon 2, encoding for tyrosine. This suggests that the frequency of spontaneous oncogenesis in various carcinomas may be tissue-specific, and alternative cell models and further passaging may be necessary to identify the rate of spontaneous oncogenesis for specific cancers.

11. *Motivated to Live Faithfully: Importance of Living According to Faith Mediates the Relationship Between Intrinsic Motivation and Global Thinking Style*
Anthony Alibro, Ishan Kulkarni and Jay L. Michaels, University of South Florida
Sarasota-Manatee

In general, religious and spiritual beliefs are thought to evoke a more global thinking style associated with deeper meaning. This should be especially true for people who are intrinsically motivated to pursue faith, as these people may be more inclined to ascribe greater meaning and importance to their faith, which may influence their lifestyle. The present study investigates whether people who are more intrinsically motivated to participate in religion consider it more important to live according to their faith and subsequently experience a more global thinking style. Data was obtained from an international survey and included 731 participants from 56 countries. Measuring intrinsic faith motivation, importance of living per tenets of one's faith, and action identification (measures global thinking style), a mediation model was applied to analyze the direct and indirect effects faith motivation and importance of living according to one's faith have on global thinking. The mediation model was statistically significant and reveals that a sense of importance in leading a life that follows faith mediates the relationship between intrinsic motivation and global thinking style ($b = .187, p = X$). From this result, people who have greater intrinsic motivation to participate in religion tend to consider it more important to lead a life that adheres to their faith's values, and in turn experience a more global thinking style. This finding provides insight into how the deep meaning religion provides many people relates to attitudes (e.g., importance) and motivation.

12. *Does Level of Minority Presence and Hospital Reimbursement Policy Influence Hospital Referral Region Health Rankings in The United States*

Hyett Farah and Hanadi Hamadi, University of North Florida

The shift from a fee-for-service payment to a value-based payment, sparked by the Patient Protection and Affordable Care Act, introduced pay for performance programs such as Hospital Value Based Purchasing. Recent research has focused on the effectiveness of the new policy initiatives on hospital systems and the associated influence on reducing cost and improving patient care. However, previous inquiry has not considered how the local community may affect hospital system performance and resulting performance data. As a result, this study investigates the association between local health performance and minority population in a Hospital Referral Region (HRR). The primary objective is to ascertain whether community diversity levels are significantly associated to local health performance guided by the Ecological model. Data was collected from the 2016 American Hospital Association dataset, Area Health Resource File dataset, Commonwealth Fund Scorecard on Local Health System Performance, and the Dartmouth Atlas Hospital Referral Region dataset. Multiple regression analysis was used to compare ethnic groups, population characteristics, hospital performance (measured by value-based purchasing total performance scores across 304 HRRs). These factors were then compared to the 36 indicators of four local system performance outcome measures: prevention and treatment, healthy lives, access and affordability, and avoidable hospital use and cost. Our primary findings show that the more diverse a HRR is the lower ranking it receives for Access and Affordability Prevention and Treatment Avoidable Hospital Use and Cost as well as Healthy Lives. Even with advancement in medical care, health disparities are prevalent and health equity remains elusive.

13. *Are Exceptions Made for Exceptional People? Deviance and Career Outcomes in the NFL*

Mark Hodae, David Hall, Jasmine Gonzalez, Eilidh Watson, Kelly Hall, Carliss Miller and Randall Croom, Stetson University

Employers (and society) often sanction individuals for deviant behavior. In some cases, employees who engage in deviant behavior are punished, suffer decreases in career opportunity, or are even fired. But while employers value compliant behavior, they also value performance. Our central question is whether employers are more willing to accept deviant behavior from employees who perform very well. To investigate, we look at 16 years of arrest records in the National Football League (NFL). Using indicators of work performance and value to employer, including Pro Bowl selection and salary, we examine whether being arrested and the nature of the arrest influences whether individuals were released from employment. We also look at whether some teams are more accepting of deviant behavior than others, and whether team performance (number of wins, playoff appearance) moderates the effect of deviant behavior. Results show a general pattern of a change in employment status after an arrest.

14. *CRISPR AceCas9 Structural Studies*

Emily Shiel and Hong Li, Florida State University

CRISPR Cas9 is a up and coming biotechnology that has the potential to cure and treat genetic diseases, produce better biofuels, and improve pharmaceutical processes by allowing scientists to edit specific parts a DNA sequence. However, there are still some activities of Cas9 that we don't fully understand, so further investigation of this molecule is vital. In Dr. Hong Li's lab, the biochemical and structural properties of a particular type of CRISPR Cas9, AceCas9 are being studied in order to gain knowledge on how the molecule interacts with DNA by characterizing the protospacer-AceCas9 and PAM-AceCas9. The protospacer is the short sequence of DNA that is targeted and the PAM (protospacer adjacent motif) is a small DNA sequence immediately adjacent to the protospacer. Ultimately, the main goal is to obtain a crystal structure of the AceCas9-sgRNA-DNA complex. Once a structure is obtained, it can be studied to determine how AceCas9 interacts with the PAM, if the length of the protospacer effects the accuracy of the cleavage, and how other biochemical properties effect the AceCas9-sgRNA-DNA interactions. This is why it is vital to get a crystalized structure of the AceCas9-sgRNA-DNA complex. First, the AceCas9 complex is purified using different types of chromatography, then the AceCas9 complexes are crystalized using the ARI Crystal Gryphon crystallization robot and also by manual set up, and finally the crystals are optimized in order to enhance their development. Obtaining this crystal could shed light on how to increase the specificity of AceCas9 and lead to other developments.

15. *The Effect of Environmental Stressors on Staphylococcus aureus Biofilm Formation*

Kelly Fryar and Bridgette Froeschke, University of Tampa

The Hillsborough River is an urban river with high recreational usage and therefore an important site to monitor for potential health concerns. Oysters live throughout the river and through consumption and abrasions serve as potential vectors for disease, particularly staph infections caused by *Staphylococcus aureus*. Biofilms are caused by environmental stressors and thus are useful in monitoring the health of an area. While monitoring *S. aureus* distribution of Hillsborough River oysters, it was found that certain locations had higher biofilm formation. A crystal violet assay was used to examine what environmental stressors were potentially associated with this increased biofilm formation, including temperature, salinity, and sub-lethal antibiotic concentrations. By themselves, temperature and site did not significantly affect the mean biofilm density and so these variables were pooled together to examine the effects of salinity and antibiotics. A two-way ANOVA was conducted to test the interaction between salinity and antibiotics. It was found that biofilm density was dependent on the interaction of these two variables. High amounts of antibiotics had the lowest biofilm density, while no antibiotics had the highest concentration. At 20ppt, the salinity of the river, density was highest at low concentration of antibiotics. At low concentrations of antibiotics, density of biofilm was highest (20ppt), whereas at medium concentrations of antibiotics the density of biofilm was lowest (10ppt). Currently, how these environmental stressors affect the water at different sites is being examined along with research on how these stressors affect expression of biofilm forming genes.

16. *Ponatinib as a Potential Therapeutic Drug for Neurofibromatosis Type 2*

Jeanine Garcia and Christina Fernandez-Valle, University of Central Florida

Neurofibromatosis Type 2 (NF2) is a genetic disease that results in the formation of Schwann cell tumors, called schwannomas, in the cranial and peripheral nerves. Bilateral schwannoma compression of the vestibulocochlear nerve (CNVIII) is the hallmark of NF2 and often results in deafness. Growing tumors can also compress the brainstem and are life-threatening. NF2 develops when mutations of the NF2 gene arise. The NF2 gene encodes for a scaffold protein called merlin that functions as a tumor suppressor and is responsible for modulating many signaling pathways. NF2 mutations that lead to merlin deletion or loss of function result in excessive cell proliferation and decreased apoptosis leading to tumor formation and growth. Currently, there is no drug treatment for NF2, but the increasing knowledge of merlin signaling pathways has advanced the field closer to finding palliative drugs. Ponatinib is an FDA-approved leukemia drug that targets key proliferation and survival pathways overactive in schwannomas. The purpose of this study is to assess ponatinib's ability to decrease cell survival and proliferation of merlin-deficient human Schwann cells (MD-HSC) with the ultimate aim of potentially repurposing it for NF2 schwannoma treatment. By utilizing fluorescence plate assays and Western blotting technique, this research demonstrates that ponatinib reduces the viability of MD-HSC in a dose dependent manner. Additionally, this study validates ponatinib's targets and identifies downstream signaling cascades leading to decreased tumor cell proliferation. Ponatinib stands as a potential therapeutic drug for NF2 patients. Further pre-clinical in vivo studies are warranted for its efficacy on schwannoma growth.

17. *Sucralose: A Dose-Dependent Bacteriostatic Agent on Probiotic Microbe*

Bifidobacterium infantis

Nikhil Ghayal, Hannah Terrell and Charles B. Coughlin, University of North Florida

Given the benefits of the human gut microbiota on host health, it is vital to study how food additives affect these probiotic microbes. Non-caloric sweeteners (NCS) are used to replace natural sugars and are "generally recognized as safe" by the USFDA. In contrast, the UKFSA has banned NCS like aspartame and stevia, and studies have found that several NCS detrimentally alter the microbiota composition. We investigated the role of sucralose, the artificial sucrose substitute in Splenda®, on the growth and metabolic activity of *Bifidobacterium infantis*. Recently, *B. infantis*' anti-inflammatory and probiotic properties have garnered great interest in nutrition and gastrointestinal microbiology. To simulate the human gut environment, *B. infantis* was anaerobically incubated at 37°C with shaking agitation in MRS media under sucralose concentrations ranging from USFDA recommended daily intake (RDA; 0.01mM) to median lethal dose (LD50; 40.25mM). Turbidity absorbance measurements were used to determine growth patterns over time. Also, incremental ratios of sucrose:sucralose were implemented in an invertase assay to ascertain inhibition of sucrose metabolism, as an assessment of inhibition on cellular metabolism. We found that all sucralose concentrations, including RDA, showed a statistically significant (students t-test, $\alpha=0.05$), dose-dependent attenuation on growth. Furthermore, the RDA and 5.05mM treatments showed a similar level of attenuation on carrying capacity (stationary phase) that was significantly

different to the attenuation observed in the 10.05mM and 20.15mM treatments. This investigation aims to encourage further research on how NCS affect our beneficial bacteria and advocate for discussions on their overall health impacts.

18. *Analgesic Color Testing - How Much Will It Take?*

LaShonna Goodman, Brittnee LeRoux, and Erika Doctor, Lynn University

Opioids and other analgesics, such as salicylic acid, have been regarded for millennia as being effective drugs for the treatment of pain and are the standard of care for pain management in most of the world. Today, long-term administration of an opioid for the treatment of chronic pain has been controversial with addiction epidemics and adverse side effects surfacing all across the United States of America. When these compounds are encountered at crime scenes often color tests, such as the Marquis test, are performed to indicate their presence. These tests can also be used in conjunction with UV/Visible spectroscopy to determine the concentration of the drug present rapidly. The purpose of this study is to determine the detection limit of detecting salicylic acid and the molar absorptivity of salicylic acid using the Marquis color test in conjunction with UV/Visible spectroscopy. The Marquis reagent was added to concentrations of salicylic acid ranging from (.03125 mg/mL – 1.000 mg/mL) and absorbance was measured using UV/Visible spectroscopy at 390 nm. The molar absorptivity and detection limit of salicylic acid will be presented. This study has the potential to show that low concentrations of salicylic acid can be determined through this technique and should also be able to be applied to other similar compounds and opioids such as morphine.

19. *Green is Your Color: Covert Versus Attitudinal Sociosexuality and Romantic Jealousy*

Tabitha Guillaume and Christopher Leone, University of North Florida

Although sociosexual orientation is related to romantic jealousy (e.g., Peters, Eisenlohr-Moul, Pond, & DeWall, 2014; Russell & Harton, 2005), prior investigations have seldom (a) included multifaceted assessments of jealousy and sociosexual orientation (cf. Chin, Atkinson, Raheb, Harris, & Vernon, 2016) or (b) addressed third variables (cf. DiBello, Rodriguez, Hadden, & Neighbors, 2015). We accordingly had 50 males and 87 females complete the Sociosexual Orientation Inventory (Simpson & Gangestad, 1991), the 24-item Multidimensional Jealousy Scale (Pfeiffer & Wong, 1989), and the Bartholomew and Horowitz (1991) attachment measure. Using hierarchical analyses in which covariates were entered first into our regression models, covert sociosexual orientation reliably predicted cognitive and behavioral forms of romantic jealousy (all $ps < .024$), whereas the attitudinal component of sociosexual orientation predicted cognitive and emotional forms romantic jealousy (all $ps < .011$) - even after controlling for participants' sex and attachment styles. Taken as a whole, our findings indicate that the relationship between sociosexual orientation and romantic jealousy is robust (i.e., not a byproduct of third variables) but also nuanced (i.e., different facets of sociosexuality related to some but not all forms of romantic jealousy).

20. *Electoral College - To Ditch or Not to Ditch?*

William Fetzer, Sydney Elney and Monica Escaleras, Florida Atlantic University

The 2016 presidential election followed a more recent theme that highlights an ongoing divide, as the results of the Electoral College did not match the results of the popular vote. Although the winner of the popular vote won by more than two million votes, it was the winner of the Electoral College who won the divisive race, an occurrence that has happened for two of the last three presidents elected. Historically, the Electoral College system is comprised of electors, who would or should reflect the popular majority of their state. Recent elections have caused many Americans to question if their vote actually matters as electors in some states could cast their votes according to political affiliation instead of reflecting the choice of the popular vote. With an interest in what election system Americans prefer to be used to elect the President, we developed an online survey and collected responses from 497 people across the United States. Through our research, we found that there is a statistically significant difference between the opinions of people who are registered to vote and those who are not registered to vote, as well as people affiliated with different political parties. By focusing on the current sentiment of the Electoral College and how much it has impacted the current state of election system, our findings can be used to improve voter turnout.

21. *Ontogeny of Morphology and Muscle Development in Two Benthic Elasmobranch Species*

Andrea Hernandez and Marianne Porter, Florida Atlantic University

Ontogenetic variation in skeletal morphology in two benthic elasmobranch species
Benthic shark species have flexible fins to navigate and grasp irregular structures of their reef habitats. The epaulette shark (*Hemiscyllium ocellatum*) is unique in its ability to walk both in and out of water using its highly specialized pectoral and pelvic fins. A similar form of aquatic walking has been noted, but not quantified, in a related species the bamboo shark (*Chiloscyllium punctatum*). Here, we investigate the development of skeletal structures in the pectoral and pelvic fins, and compare the functional morphology between these two related species. We quantified morphological variables in pectoral and pelvic fins after clearing and staining the specimens. In both the pectoral and pelvic fins, we measured the length, width, and number of basal and radial cartilages. We also measured the inter-radial distance between successive radial cartilages and the gap between meta- (mtp) and mesopterygium (msp) basal cartilages. Using standardized data, we found that the basal cartilages in the pectoral fins of *H. ocellatum* were shorter and had a greater mtp-msp gap than *C. punctatum*. Additionally, *H. ocellatum* had more radii in both fin pairs with greater overall inter-radial distances. These preliminary findings suggest that the fin morphology of *H. ocellatum* may allow the fins to produce more specialized movements than *C. punctatum*. In future work, we aim to gain a better understanding of the development of such specialized fins for aquatic and semi-aquatic locomotion by observing the fin morphology of more embryos of each species.

22. *A Spectral Study and Comparison of Supernova Remnants, and What It Means for the Origins of Cosmic Ray*

Shannon Silverman and John Hewitt, University of North Florida

Using gamma-ray data from the Fermi satellite, we plan to continue previous analysis of the energy emitted from supernova remnants, in order to better understand the mechanisms of cosmic ray acceleration. Recent studies have provided evidence for supernova remnants—the cast off outer layers of collapsed stars—as sources of high energy particles known as cosmic rays, but the manner in which a supernova remnant accelerates cosmic rays is still unexplained. Additionally, there is some disagreement between what is expected from current models and what is actually observed. Through further analysis of the energy emitted from supernova remnants, using nine years of data, we can investigate in detail the peak energy and manner of emission of cosmic rays from individual supernova remnants. We can also compare the results of multiple supernova remnants to each other, which will provide us with a better understanding of the mechanisms of cosmic ray acceleration as well as insight into improving current models.

23. *Reducing Problem Behaviors in Deafblindness*

Nina Sotolongo, Isaac Singer, Sarah Ivy, Florida State University

The purpose of this project is to examine potentially effective interventions for reducing problem behaviors in children with deafblindness in a single-case study. Due to a notable lack of stimulus from sight or sound, the brain of a child with deafblindness may seek stimuli from another source, such as physical touch, which may often lead to nonfunctional behaviors also known as stereotypy (includes mouthing items, self-hitting, forceful contact with objects or surfaces nearby). Responsibilities include coding videos of the participant on Vosaic software as they engage with leisure items for occurrence of stereotypy, as well as analyzing participant behavior and assisting in improving experimental design. The overall goal and application of this project is to help children with disabilities live more functional day-to-day lives.

24. *The Effect of The Osmotic Drying Process on The Microstructure and Flexural Strength of Gelcast Alumina.*

Tony Ichite and Emily Hammel, Tallahassee Community College

The research that I am participating in is research into the effect of the osmotic drying process on the microstructure and flexural strength of gelcast alumina. Since Summer of 2017 I have been looking into how the osmotic drying process may affect things like bulk density in samples of alumina. The osmotic drying process is a process of osmosis in which high pressure of a liquid desiccant on the outside of the sample is imbalanced with the lower pressure of the moisture within the sample. When these conditions are introduced, the natural process of osmosis occurs, draining the sample of the water within. This process is a way of drying that helps to eliminate deformities that can come about through other drying methods, such as air drying. While researching this process, a couple of portions of the process were varied. The molecular weight, the osmotic

pressure, and the immersion time of a sample in the liquid desiccant. These varied at molecular weights of 100,000, 35,000, and 2,000, osmotic pressures of 2.5 9.5 and 22, and immersion times of 15, 45, and 75 minutes. Most of the variable could be tested together, except for some molecular weight and osmotic pressure combinations whose solutions would be too thick to be effective. Testing these variables, it became possible to see how bulk density was affected through a drying process that would help eliminate deformities in the forming process.

25. *An Investigation of Down Syndrome Morphology: Visualizing the Brain and Skull of Children in 3D using Amira*

Shebly Lucia and John Starbuck, University of Central Florida

Down syndrome, a genetic disorder in which a third copy of chromosome 21 is present (also known as trisomy 21), is a condition associated with intellectual and developmental delays. Specific physical traits, many evident in the craniofacial region, are also characteristic of this condition. This research aimed to identify the presence or absence of different regions of the skull or brain to determine how morphology of children with Down syndrome differed from relative age- and sex-matched controls. A database was developed by cataloging different regions of the brain, skull, and other notable features using 3D MRI and CT scans. These images were analyzed using the 3D visualization software Amira. Future methodology will move to collect quantitative data using control images. The research is currently ongoing, and therefore no finalized results have been established. However, results are expected to have a potential academic impact by providing knowledge of global and local anatomical morphometric differences in the craniofacial complex of individuals with trisomy 21. Furthermore, this research may have a clinical impact by identifying locations where differences occur and where future therapeutic endeavors could be focused, particular during development and subsequent growth, to improve a variety of medical conditions commonly associated with Down syndrome.

26. *Unusual Weather Patterns Impact Predator-Prey Dynamics: An Example with the Snail Kite*

Susette Oñate and Robert Fletcher, University of Florida

Understanding the effect of weather patterns on predator-prey dynamics is essential to conservation management. The Florida snail kite (*Rostrhamus sociabilis*) is limited to central and southern Florida wetlands. Its survival is directly linked to hydrology in these habitats. Patterns of rainfall are a main factor contributing to an area's hydrology. Concerns have been raised over recent dry-downs of the wetlands, but data examining how much dry-downs impact kites and their prey is limited. Changes in kite's food supply have influenced its ecology. Initially, kites fed on native Florida apple snails (*Pomacea paludosa*); however, the island apple snail (*Pomacea maculata*) — an exotic species from Brazil — became established in the early 2000s. Exotics have denser populations, are more resistant to lower water quality, and reproduce more frequently than natives, augmenting the prey available to snail kites. Such prey subsidy resulted in longer breeding seasons, more initiated nests, increased re-nesting attempts, and

increased chick survival. In May 2017, 66% of Florida was experiencing drought, but heavier-than-normal rainfall in mid-June resulted in only 15% being considered “abnormally dry.” This study examines how these extreme weather patterns affected exotic and native snails and how kites were consequently affected. We surveyed the two snail species throughout May and June, recorded changes in snail abundance, and determined its correlation to kite reproduction. We found that with the onset of rains, snail kites began breeding almost immediately. These results show how species rapidly respond to abrupt changes in weather, potentially benefiting the recovery of endangered species.

27. *Macromolecular Crowding Affects Protein-Ligand Interactions and Protein Droplet Formation*

Lily Parker and Archisman Ghosh, Florida State University

I currently am involved with research looking into the behaviors of proteins in the cells of the body. To be more specific, we are studying phase transitions of proteins (like changing from a solid to a liquid, etcetera). In our day-to-day research, we grow E.coli bacteria that have been injected with recombinant plasmids, therefore growing our proteins. We basically turn the bacteria into protein factories. Once enough is grown, we lyse the bacterial cells, and send the solutions through different columns to isolate our proteins. Once our protein is alone, we test them with chowders, dyes, and other factors, and observe their phase changes under microscopes. Although the research is young and ongoing, we have found general trends of crowders causing special liquid-liquid phase transitions, which alters the functionality of proteins in the cell.

28. *A Case of Refractory Pulmonary Coccidioidomycosis Successfully Treated with Posaconazole Therapy*

Raj Patel and John Green, University of South Florida

Coccidioidomycosis is an endemic fungal infection caused by the inhalation of the spores of Coccidioides species. Patients with underlying immunosuppressive illness can contract chronic or disseminated disease which requires prolonged systemic therapy. Pulmonary coccidioidomycosis remains as an illusory and abstruse disease, with increased prevalence that poses as a challenge for clinicians in developing an effective strategy for treatment. Here, we report successful treatment of a refractory case of chronic relapsing pulmonary coccidioidomycosis in a 50-year old woman with a thin-walled cavitory lung lesion who was ultimately treated with posaconazole.

29. *Nucleosome Dynamics in a Cell Line Model of Parkinson’s Disease*

Joe Pelt and Jonathan Dennis, Florida State University

Deoxyribonucleic acid (DNA) contains the genetic material of living organisms. Nucleus DNA is packaged into nucleosomes, which are composed of DNA wrapped around positively-charged histone proteins. Nucleosome organization regulates gene expression and has been shown to undergo indiscriminate remodeling in response to cellular stress. Parkinson’s disease is a neurodegenerative disease that results in tremors, stooped-gait, and loss of memory. It is caused by the progressive death of dopaminergic cells in

the substantia nigra. Studies have shown that major molecular pathways are disrupted in Parkinson models. Our study aims to learn how nucleosome organization is altered as SH-SY5Y neuroblastoma cells are induced with 1-Methyl-4-phenylpyridinium iodide (MPP+) to model Parkinson's Disease. Mapping the precise locations of these nucleosomal changes will likely give insights into the etiology of Parkinson's Disease.

30. *Why have Differing U.S. Policies Resulted in Increased Migration from Latin America to the United States?*

Tiana Peterson and Joshua Gellers, University of North Florida

Why are some U.S. immigration policies more successful than others at addressing the flow of migrants? In this comparative research project, a Most-Different-Systems (MDS) research design is employed to examine two cases in which immigration flows from Latin America to the United States increased despite legislation with polar opposite objectives. Two contrasting U.S. policies serve as differing values on the independent variable—policy type. The dependent variable is the rate of migration from Latin America to the United States in a given year. The policies analyzed are the Illegal Immigration Reform and Immigrant Responsibility (IIRIR) Act of 1996 and the Legal Immigration Family Equity (LIFE) Act Amendments of 2000. The MDS model is utilized to identify the similarities between the two cases and events that led to the increased rate of immigration in both instances. The IIRIR Act barred illegal immigrants from returning to the United States if they did not have the proper documentation, but resulted in an increase in migration and available visas. On the other hand, the LIFE Act encouraged immigrants to become citizens by looking to unite and build immigrant families living in the U.S through the distribution of green cards or visas for employment. These policies both resulted in increased migration (14% and 9.7%, respectively). Consequently, both cases led to millions of hopeful foreigners waiting to be permitted to reside in the United States, increasing authorized and unauthorized immigration.

31. *Cambodian Sign Language: Development Process and Impacts on Deaf Cambodians*

Kaitlynn Himmelreich, Clayton McCarl, and Anne Pfister, University of North Florida

My research investigates the emergence of Cambodian Sign Language (CSL) and its impacts on deaf Cambodians. Between 1975 and 1979, Cambodia experienced a civil war and genocide that killed a quarter of its population. These years of communist rule in Cambodia are known as the Khmer Rouge. I intend to investigate deaf Cambodian life in a pre and post Khmer Rouge context. Presumably, deaf Cambodians did not have an official sign language with which to communicate prior to 1997. Between 1997 and 2013, two different sign languages emerged, one based on American Sign Language (ASL) and one that claims to be more “purely” Cambodian. In 2013, a Sign Language Unification Committee was formed and since then, foreign organizations have been collaborating with Cambodians to create an officially-established Cambodian Sign Language. Using ethnographic methods, I will interview and observe participants to gather qualitative data about the deaf experience prior to 1975 and to compare the economic and social standings of adult users of both languages. By comparing these signers, I hope to illuminate potential discrepancies that emerged as a result of the dual-language issue and

to provide context for the ongoing development of deaf education in contemporary Cambodia.

32. *The Metabolites Produced by Batrachochytrium dendrobatidis Damage Crayfish Gill Morphology, Cause Gill Recession, and Negatively Affect Their Respiration Quality*
Celeste Giglio and Taegan McMahon, University of Tampa

Infection by *Batrachochytrium dendrobatidis* (Bd), a pathogenic chytrid fungus, can kill adult crayfish (*Procambarus spp.*) and infects the intestinal tracts of crayfish in the wild. Bd-infected crayfish can transfer the Bd infection to other susceptible hosts, e.g. amphibians. Currently, the parasitic dynamic between the crayfish and the fungus has not been well-studied. Bd appears to cause mortality in crayfish by causing gill damage and altering respiration of the crayfish. We exposed crayfish to the fungus and its metabolites in order to gauge the effects of infection on gill morphology and gill recession. We also tracked crayfish survival and respiration quality. We found that exposure to Bd and its metabolites damaged crayfish gills, and negatively affected their respiration quality.

33. *Analysis of Data Sampling Techniques in Soundscape Ecology*
Evan Waldmann and Jonathan Beever, University of Central Florida

The field of soundscape ecology aims to measure an ecosystem's relative health through field recordings of human-created and natural sounds, analyzed using mathematical indexes modeled on ecological theories. Over the last few years different lengths of field recordings, indexes, and sampling techniques have been used to analyze environments with no clear standard outlined in the literature. Studies to date have used various and inconsistent recording capture and sampling methods, while providing little to no discussion on how specific methods might skew their findings (Kasten, Gage, Fox, & Joo, 2012; Pieretti, Farina, & Morri, 2011; Pijanowski et al., 2011). In this study, we analyze the effect of calculating indices for a varying number of varying sample lengths from 10 minute and 60 minute field recordings. By calculating indices for the sample lengths instead of for full recordings, we hope to find the optimal sample length and number of samples per recording needed in order to obtain index values (using root-mean-square (RMS), ACI, and NDSI) that are close approximations, averaged over time, to the index values calculated for the entire recording. Through this we explore the opportunity cost between exact analysis consisting of vast amounts of computational time and approximate analysis consisting of potential inaccuracies and biases. Findings from this study will benefit future work in soundscape ecology by strengthening the theory behind automated computational approaches to understanding big data collected through field recordings.

34. *Multi-trophic Mangroves on a Mission*

Kamelah Jones, Melinda Donnelly, University of Central Florida, Richard Baptiste, Paul Wills, Harbor Branch Oceanographic Institute (FAU), Jeff Beal and Annie Roddenberry, Florida Fish and Wildlife Conservation Commission

Red mangroves (*Rhizophora mangle*) are essential components of tropical and sub-tropical wetlands in Florida. *Rhizophora mangle* is an ecosystem engineer and decreases shoreline erosion, making it a common species used in shoreline restoration. The purpose of our study was to investigate effect of propagule exposure to high and low nutrient levels on growth and survival of *R. mangle* planted in the field. *Rhizophora mangle* propagules were collected in fall 2015 and grown in a multi-trophic aquaculture system at Harbor Branch Oceanographic Institute. Prior to field experiment, some *R. mangle* seedlings were placed into low nutrient conditions during final stages of culture process. In May 2017, 70 *R. mangle* seedlings (35/treatment) were planted in restored tidal marsh at Marine Discovery Center (New Smyrna Beach), alternating high and low nutrient treatments in two rows along shoreline (35/row). Seedlings were monitored monthly for survival, growth, and leaf production. After 6 months, we observed survival (green meristem and leaves) in 25 seedlings (71%) from high treatment and 7 seedlings (20%) from low treatment. Mean change in height was 2.5 cm and 2.3 cm in high and low treatments, respectively. Average change in leaves was 0.2 leaves for high treatment and 0.5 leaves for low treatment. Final survey occurred after Hurricane Irma in September 2017 and may have affected survival and leaf counts of seedlings. Based on our results, *R. mangle* from the high nutrient treatment had better survival, suggesting this is the preferred culture technique for plants grown for future stabilization of Florida shorelines.

35. *KSHV ORF6 Represses KSHV Lytic Gene Expression in Primary Effusion Lymphoma Cells,*

Katherine Glickman, Richard Smindak, and Zsolt Toth, University of Florida

Kaposi's Sarcoma-Associated Herpesvirus (KSHV) is a human oncogenic herpesvirus that is the etiological agent of Kaposi's sarcoma, Primary effusion lymphoma, and multicentric Castleman's disease. KSHV is a 165-kilobase double-stranded DNA virus that consists of at least 100 genes. KSHV, in common with all herpesviruses, has two distinct life-cycle phases, a latent phase and a lytic phase. The switch from latency to lytic phase is carefully regulated. One important regulatory factor is the key KSHV transcription factor RTA (replication and transcription activator), which is sufficient to activate the lytic replication. Recently, the Toth lab identified the KSHV single-stranded DNA binding protein ORF6 as a binding partner of RTA by complex purification. While ORF6 has been shown to be essential for KSHV lytic DNA replication, based on its interaction with RTA we hypothesized that ORF6 regulates viral gene transcription prior to viral DNA replication as well. Using Primary Effusion Lymphoma (PEL) cells we have confirmed the RTA-ORF6 interaction by immunoprecipitation and have found that ORF6 shRNA knockdown leads to an increase in lytic gene expression both in latent cell cultures and in cells in which the lytic KSHV cycle has been induced. This suggests that ORF6 acts as a transcriptional repressor in PEL cells, perhaps by directly binding to RTA and inhibiting its trans-activation activity. We propose that ORF6 binds RTA prior to

viral DNA replication to both maintain latency and limit lytic gene expression post induction of lytic replication.

36. *The Effects of Binaural Beats on Mood and Cognition*

Olivera Petrovich and Christina Salnaitis, University of South Florida

Binaural beats are audio stimuli that present a sound emanating at different frequency tones in each ear. The brain responds by reconciling a perceived third frequency. Binaural beat technology is marketed as a self-improvement tool and is considered a facilitator that can lead to reduced stress, improved mood, increased cognition, deepened meditation, and altered states of consciousness. The purpose of this study is to explore the influence of binaural beats that produce enhanced delta and theta brain waves to determine if these changes can improve mood and creativity. Participants were given the PANAS and the RAT to measure mood and creativity, respectively, in a pretest-posttest experimental design. Participants were randomly assigned to listen to 20 minutes of binaural beats masked by rainforest sounds in the experimental group (31 participants) or rainforest sounds without binaural beats in the control group (25 participants). There was no effect of binaural beats on the RAT. Other research has found that binaural beats can have a positive effect on divergent creativity, but we found no effect with convergent creativity. For positive affect, both conditions declined at posttest. For negative affect, both conditions also declined. The delta/theta range of binaural beats is intended to provide a relaxing sleepy state, which may have resulted in an overall blunting of affect.

37. *Designing a Mobile App to Help Young Adults Develop and Maintain Mental Well-Being*

Maya Patel, Aman Shah, Krisha Shah and Miloslava Plachkinova, University of Tampa

Mental health is “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO 2014). A person that is not mentally sound will have a difficult time integrating with the community and society around. This is especially true for young adults as they are going through changes both socially and physically. Mobile application platforms are an increasingly widespread technology (Rakestraw et al. 2013), especially in healthcare where laypersons can get accurate and reliable medical data whenever they want it through devices and platforms such as Fitbit or Apple Health. However, little work has been done to assess a person’s mental health on a mobile application, partly because of the challenges in diagnosing a case. The current study is focused on developing the design and message framing of a mobile application that aims to promote mental well-being among young adults between 18 and 24 years old. Our application is not designed to give medical diagnosis of any sorts. Rather, it is intended to create awareness within oneself that there might be some mental health issues and to suggest possible steps to alleviate the problem. The goal of the application is to give holistic remedies in order to restore mental well-being among young adults and encourage them to reach out to providers if they feel their issues are more serious.

38. *VRvisu+ : A Tool for Virtual Reality-Based Visualization of MRI Images.*
Jason Smith and Sandeep Reddivari, University of North Florida

Current medical imaging techniques, such as MRIs and CT scans, create a two-dimensional representation of a 3D object such as tumor. Because of the complications that may arise during diagnosis or treatment, accurate information is necessary to treat a patient more efficiently. The projection of a 3D object to a two-dimensional representation results in a loss of information such as size, shape, and location. Currently, doctors are trained to look at multiple 2D images from different angles to get an understanding of the MRI or CT images. We address this problem by developing an enhanced Virtual reality (VR)-based visualization tool to represent MRI images in 3D space. This will allow doctors to get the most accurate information in an MRI image possible. Additionally, doctors would be able to practice a surgery by splicing the 3D object (e.g., a virtual tissue) and removing any tumors or foreign objects from patient's body. Additional features, such as multi-user collaboration will also enable doctors to train students on proper diagnosis and treatment.

39. *Comparative Analysis of Protein Structures Using MEGA6 for Select Bombyx Species*
Dillon Pierce, Ashley Spring, Rajesh Melaram, Eastern Florida State College

Fibroin is a substance manufactured by nature that can be utilized in various ways for the benefit of humanity. It is a polypeptide secreted by members of arthropoda, and the most prolific, widely recognized producers of this protein are spiders, of order araneae, and the silkworms of order lepidoptera. Of these, the domestic silkworm, *Bombyx mori*, is the only species used to produce silk for the mainstream textile industry. Due to its nature as a domestic species, centuries of selective breeding have so altered the silkworm's genetic structure that determining its phylogenetic heritage has become difficult. Finding where in the cladogram *B. mori* belongs is important if the gene for fibroin is to be inserted into other organisms, which would facilitate its production on a much larger scale than is possible now, and thus make it available for use in the medical and defense industries, among others. Therefore, a synthetic construct of the *B. mori* fibroin protein was used to construct phylogenetic trees using the maximum likelihood, minimum evolution and neighbor-joining methods, in the Basic Local Alignment Search Tool (BLAST) and the Molecular Evolutionary Genetics Analysis Version 6.0 software (MEGA6). It was hypothesized that the *B. mori* synthetic construct would have a bootstrap value that put it closest to its supposed progenitor, *Bombyx meridiana*, in most of the trees. After comparing the bootstrap values between the trees, it was determined that two of the three trees had the synthetic construct appear closest to *B. meridiana*, thus the hypothesis was accepted.

40. *Recent Discriminatory Policies Towards the Uighur Ethnic Group in Xinjiang, China.*
Cassidy Weekes, Elizabeth Murray, Amy Grubb, Embry-Riddle Aeronautical University

The divide between Uighur and Han ethnic groups in Xinjiang, China has been fluctuating over the years with leaders and policy makers influencing the relationship. This paper analyzes the relationship between Uighur and Han ethnic groups and the increasing divide between both groups. It uses recent national and local policies to examine the discriminatory leanings of the policies and if they are collectively growing over time and increasing the divide. The analysis in this paper is based off of open-source documents and uses qualitative analysis of case studies. The paper is divided into four sections: Uighur identity construction, religion, education, and labor market are negatively affecting the Uighurs. These four areas have shown increasing separation between the ethnicities due to local policies showing discriminatory nature. Governments need to decide whether they actually want ethnic integration or not and recognize how the discrimination in their policies effects this integration.

41. *Diagnosis of Citrus Greening Disease by qPCR*
Fernando Rocha Vento and Xing-Hai Zhang, Florida Atlantic University

Huanglongbing (HLB) disease, also known as citrus greening is a phloem restrictive disease that affects orange trees as well as other closely related species. HLB is caused by the gram-negative bacteria *Candidatus Liberibacter asiaticus*, which is transmitted by the Asian psyllid, *Diaphorina citri*. HLB causes the trees to have a blotchy asymmetrical molting of leaves, dieback of twigs, stunted growth, and premature defoliation, all of which lead to the death of the tree. The tree also produces small, partially green, lopsided fruits that contain aborted seeds and a bitter taste. There is currently no cure for this disease, therefore the best way to currently combat it is by taking preventative measures. These preventative methods include implementing the use of healthy planting material, a prompt diagnosis and removal of infected trees and branches as well as controlling the psyllid population. Genetic modification of the citrus tree is being tested, but it might not be a viable solution depending on how the consumers react to eating genetically modified oranges. Quantitative real-time PCR (qPCR) can be used to diagnose the presence of the CLAs bacteria in the possibly infected tree so that it can be removed promptly. 20 nanograms were used from leaf samples of eight different trees for the qPCR analysis. There were samples from three trees which were healthy and used as a control. COX and EF primers were used as references against the HLB primers which lead to the successful diagnosis of HLB in the tested trees.

42. *Advancing Diabetes Care: The Optimization of Insulin Pump Medication Delivery*
John Wilcox and Cesar Rodriguez, Florida State University

Type 1 diabetes is a chronic, autoimmune illness that demands those diagnosed to give daily injections of insulin, a hormone required for stabilizing the body's blood glucose levels and promoting healthy growth. A method to combat the damaging effects of this disease is insulin pump therapy. This form of treatment allows persons with type 1 diabetes to administer insulin continuously via an automated machine into their body;

however, injection malfunctions can occur on a routine basis, severely affecting the user's health. This research project aims to identify the occurrence of insulin pump medication delivery failure by recognizing intratubular pressure differentials. The combination of a Pendotech PRESS-S-000 pressure transducer affixed to the tubing of a Medtronic Paradigm Revel insulin pump system will allow for the measurement of erratic back-flow pressures associated with blockages, cannula kinking and injection regions of insulin-induced lipohypertrophy. Mechanical detection of insulin delivery failure will allow for a novel detection system to alert users if their insulin pump system is not administering medication properly.

43. *Generation of FVIII-Specific Chimeric Antigen Receptor (CAR) Tregs to Suppress Inhibitor Development in Hemophilia A Mice*

Rania Sabounji, Moanaro Biswas and Roland Herzog, University of Florida

Hemophilia A is an X-linked clotting factor disorder in which patients have a deficiency in coagulation factor VIII (FVIII). The development of inhibitory antibodies in hemophilia A patients who receive FVIII replacement therapy necessitate new therapies for tolerance. Chimeric antigen receptors (CAR) are recombinant molecules that combine antigen binding and T-cell signaling functions by redirecting immune reactivity toward a chosen antigen. We combined the specificity of CAR technology with regulatory T cell (Treg) therapy to produce FVIII specific Tregs. We did this by complexing the single-chain antigen recognizing variable fragments of a human FVIII antibody to primary and co-stimulatory T cell signaling domains (CD3 ζ and CD28), then inserting the CAR molecule into Tregs to generate FVIII specific CAR-Tregs. We tested for FVIII specific activation and proliferation of FVIII CAR-Tregs in vitro. Antigen recognition and signaling by CAR-Tregs may also result in activation-induced cell death (AICD) of the transduced cells. To help find a balance between antigen specific activation and AICD of the CAR-Treg, we made a series of mutations in the Immunoreceptor Tyrosine-based Activation Motifs of the CD3 ζ domain, ITAM-1 and ITAM-3, by site-directed mutagenesis. This has provided us a superior cell-therapy for immune tolerance to hemophilia. We will test for prevention of inhibitory antibody formation by adoptively transferred CAR Tregs in mice. Inhibitors will be generated by once weekly injections of FVIII and inhibitory antibody titers in treated and untreated mice will be tested by ELISA and the Bethesda assay.

44. *Religion in the Medical Field: Influence of Spiritual Communication with the Caregiver on Patient's Health*

Sara-Marie Saliba and Linda Connelly, University of North Florida

Influence of Spiritual Communication Health care professionals typically avoid religious discussion with their patients, focusing on the clinical aspect. Review of published literature shows that religious involvement has positive physiological and psychological responses on the patient's health. Analysis of religious aspects on the physiological health notes that religion typically reduces stress and anxiety, which aids in the patient's recovery time. Winkelman and Baker believe that religion is a coping mechanism. Studies have shown that active religious believers have "lower morbidity and mortality

rates for virtually all diseases” compared to nonparticipatory patients. Care givers agree religion has shown to improve the patient’s health and create a more open relationship. Others refrain from religious topics because they are unfamiliar with the varying belief systems or fear that a patient may be offended. Mutual understanding of the patient’s religion allows the health care professional to understand future decisions that the patient would make on behalf of their health and possible methods of carrying out their treatment. Anthropologically, religion provides an outlet for the patient, giving them a sense of community and relief that there is a greater being(s) taking care of them. Analysis shows that religious discussion comforts and improves the patient’s physiological health while providing care givers a deeper understanding of patients’ outlook on treatment. After acknowledging positive and negative effects of spiritual discussion the authors conclude, if the topic of religion were to arise then there are many positive effects for the patient when the care givers engage in spiritual dialogue.

45. *Gopher Tortoise Social Interactions in a S. Florida Population*

Andrea Rodriguez and Evelyn Frazier, Florida Atlantic University

Gopherus polyphemus is a threatened species native to the southeast United States. Previous research has established that the climate in South Florida gives its populations unique reproductive and ecological traits not found in other populations. Under the consensus made by the Gopher Tortoise Council, regarding the concept of a minimum viable population (MVP) and a minimum reserve size (MRS), the gopher tortoise population in the Florida Atlantic University Preserve (FAUP) is not viable. The overall goal of this study is to evaluate the social interactions and movements of the gopher tortoise population in the FAUP, with an emphasis on reproductive behaviors. The study will encompass a telemetry and camera study in which 12 gopher tortoises in the FAUP will have radio transmitters attached to them and game cameras placed at their burrows to record their social interactions. GPS coordinates have been collected on 10 gopher tortoises and mapped to reveal the tortoises’ movements. The overlapping movements of some tortoises are indicative of possible social clusters. Camera data analysis has revealed 105 social interactions in the scrub habitat and 44 social interactions in the grassy habitat with the majority of the interactions in both habitats being mounting. The data from this research will allow us to better understand the behavior and reproduction of this population, which is crucial for future assessments of population viability and the continual analysis of the uniqueness of South Florida populations. Furthermore, this study can be used to improve conservation efforts for the populations in South Florida.

46. *The Effects of Rumination on Mood After Facebook Use*

Danielle Russo, Victoria Pena, Holly Stogsdill, Marissa Del Vecchi, Nhari Bryant, Erin Koterba, Michael Stasio and Erica Yuen, University of Tampa

This study considered the causal effects that rumination had on mood after Facebook use. Participants (N=99) were randomly assigned to one of five groups who each completed surveys, then browsed either Facebook or the general web for 20 minutes. After 20 minutes passed, three of the Facebook groups were given a following activity where they were instructed to reflect on their experience positively (group 1), negatively (group 2),

or generally (group 3), reflecting for 8 minutes. The two control groups did not reflect on their experience with either Facebook (Group 4), or browsing the web (Group 5). Lastly, participants completed a set of two additional follow-up text message surveys that evaluated mood level. We hypothesized that: (1) mood levels will be lowest for those who engaged in rumination after using Facebook, and highest for those who did not use Facebook; (2) These differences will be maintained 5 hours later; (3) Using Facebook is associated with higher levels of envy compared to browsing the Internet; (4) Using Facebook is associated with higher levels of nostalgia compared to browsing the Internet; and (5) Using Facebook is associated with lower levels of perceived meaningfulness of activity compared to browsing the Internet. The results of this study found that mood levels are overall negatively impacted for those who ruminate after Facebook use. Additionally, results suggested that greater levels of nostalgia were associated with Facebook use compared to Internet browsing.

47. *Effects of NPF and Starvation on Antioxidant Activity in Tenibrio molitor*

Damir Sarajlic, Raphaela Macanas, Jake Mullery, Stephenie Dilts, University of North Florida, John Hatle, University of North Florida, Cathy Patterson, Florida State College at Jacksonville

Physiological stressors have been shown to increase mechanisms of cell production such as H₂S production, heat-shock protein mRNA, and antioxidant activity. Our study focuses on antioxidant activity due to Neuropeptide F injection or starvation in juvenile mealworms (*Tenibrio molitor*). (NPF), the insect homolog of vertebrate NPY, functions as a feeding stimulant and increases during periods of dietary restriction. It can increase cell protective mechanisms such as autophagy and heat shock protein 72 levels. We tested for effects of NPF injections on total antioxidant power of mealworm homogenates. NPF did not alter antioxidant activity. We also subjected mealworms to starvation for one to ten days. Starvation for five days decreased antioxidant activity in comparison to fewer or more days of starvation. Further investigation will explore the use of alternative stressors, such as hypoxia.

48. *Colorimetric Assay for the Detection of Zika Virus for Point-of-Care Applications*

Allison Williams, Adam Reed and Yulia Gerasimova, University of Central Florida

The Zika virus presents no easily recognizable symptoms but has the potential to cause serious long term damage; hence there is a need for a cheap, reliable, and efficient diagnostic method. Current methodologies do not meet patient needs. Restrictive testing locations limit the number of patients who may receive testing, and timely results are often not available. Here, we propose to use a sensor consisting of two deoxyribozymes: a phosphodiesterase-like split deoxyribozyme and a G-quadruplex (G4) peroxidase-like deoxyribozyme. The split phosphodiesterase-like deoxyribozyme hybridizes to a conserved fragment of the Zika virus genome, which re-forms the deoxyribozyme catalytic core and enables cleaving a G4 deoxyribozyme-containing oligonucleotide substrate. The G4 deoxyribozyme, originally sequestered in a stem-loop of the substrate, is released upon the substrate cleavage and, in the presence of hemin, catalyzes peroxidation of a colorless organic indicator, yielding a colored product visible to the

naked eye. While concentrations of Zika virus RNA in clinical samples are below the capabilities of this sensor, pairing it with an isothermal amplification system such as Nucleic Acid Sequence Based Amplification (NASBA) allows for a point-of-care compatible method for Zika virus diagnostics. The sensor has been optimized using viral RNA, and its selectivity and limit of detection have been determined.

49. *Title: Hurricanes and Hegemony: A Study of American Imperialism in Puerto Rico, 1898-1940*

Ian Seavey, Elizabeth Littell-Lamb and Spencer Segalla, University of Tampa

The paper is centered on a hurricane that hit Puerto Rico in 1899 that caused major devastation. I examine the political, economic, social, and cultural effects the hurricane had on Puerto Rican relations with the United States. I assert that the hurricane played a larger role in allowing the U.S. to exercise hegemony over the island than previously argued. Politically, I focus on the change of sovereignty that took place during the time of the hurricane. Economically, I examine how the hurricane played a significant part in the U.S. switching Puerto Rico's economy from a coffee producing to sugar producing. Socially and culturally, I look identity formation among Puerto Rican elites and peasants. I state that the hurricane displaced many elite Puerto Ricans from their property thus causing their social status into question. Elite Puerto Ricans then appropriated peasant (jíbaro) culture and used the jíbaro as a symbol of what it meant to be Puerto Rican. I follow this phenomenon into the 1940s with the rise of the populist party Partido Popular Democrático (PPD) who also used the jíbaro as a symbol of Puerto Rican identity. In conclusion I state that U.S.- Puerto Rican relations are still complicated and further research needs to be done to make the picture clearer.

50. *KSHV ORF6 Supports KSHV Lytic Gene Expression in Adherent Epithelial Cells*

Kyra Senchyshak, Thomas Nguyen, Katherine Glickman, Juan Alonso, Naeem Motlagh, Richard Smindak, Gavin Golas, Zsolt Toth, University of Florida

KSHV ORF6 Supports KSHV Lytic Gene Expression in Adherent Epithelial Cells Kyra Senchyshak, Richard Smindak, and Zsolt Toth Kaposi's Sarcoma-Associated Herpesvirus is a 165-kb gamma-herpesvirus, which is responsible for the development of Kaposi's sarcoma, Primary Effusion Lymphoma, and multicentric Castleman's disorder. Like all Herpesvirus's, KSHV has a biphasic lifecycle with both a latent and lytic phase, both of which contribute to pathogenesis. The regulation of latency and lytic replication is key to viral persistence and as such regulation of the transition from latency to lytic replication is tightly controlled. A key factor in controlling this is the transcription factor RTA, which is sufficient to induce lytic reactivation. In an effort to determine more regulators of RTA, the Toth lab affinity captured RTA and determined its binding partners by mass spectroscopy. One protein of interest found to interact with RTA was the single-stranded DNA binding protein ORF6. ORF6 has been shown to be required for viral DNA replication, however based on its interaction with the transcription factor RTA we hypothesized that ORF6 may also be involved in RTA mediated transcription. In fact, we have found that in adherent epithelial cells ORF6 supports RTA mediated transcription. Upon knockdown or knockout of ORF6, mRNA and protein levels of select viral lytic

proteins decrease. This finding suggests that ORF6 is a cofactor of RTA in adherent epithelial cells, required for efficient RTA function.

51. *Photo-Catalytic Conversion Efficiency of Metal-Organic Frameworks in The Selective Oxidation of Benzyl Alcohol*

Jonathan Sepulveda and Fernando Uribe-Romo, University of Central Florida

This study explores the effects of calibrating novel photo-reactors using the standard actinometrical reduction of ferric oxalate to ferrous oxalate. This example of photocatalysis, sensitive to the blue range of visible light for the activation of this chemical actinometer, is carried out in both cylindrical and spherical photo-reactors. The difference in Gaussian geometry of these reactors subjects far-field luminosity effects to the evaluation of their impacts on the photon flux of the photo-oxidative conversion of ferric oxalate. The antecedent quantum yields were derived empirically from the reaction's measured rate of product formation. These photo-reactors employed varied cooling methods to mitigate heat dissipated from the light-emitting diode strips, operated at varying wattages. The photo-catalytic oxidation of benzyl alcohol to benzaldehyde, with differently substituted electrophilic functional groups on the para- position of benzenoid ring was also conducted. Zirconium based metal-organic frameworks are used as catalysts in this process, where both the feasibility of previously unstudied metal-organic frameworks, and the properties of differently functionalized benzyl alcohols validate a more effective means of obtaining benzaldehyde. Metal-organic frameworks previously studied in this photo-catalytic reaction are also used as reagents in the oxidative reaction as a control for measuring the increase in efficiency of conversion.

52. *Fins4kids*

Cailla Strobel, James Gelslechter and David Lambert, University of North Florida

This three-year study has focused on the conservation, preservation and education of the importance of sharks on our marine ecosystems and how human interaction, both positive and negative, have affected the shark populations, locally, regionally and internationally. The research methods include multiple dive sessions with various species of sharks, including bulls, tigers, great hammerheads, sandbars, silkys, duskys and blacktips. Current research focuses on assessing mercury levels utilizing tissue samples as well as conducting field research on reproductive hormone levels. Education is one of the critical components to raising general awareness of the important and necessary roles sharks play within our environments. Though collaborating with Sharks4Kids, an international non-profit whose mission is to create the new generation of shark advocates through the facilitation of dynamic educational materials. The focus now shifts on educating schoolchildren (4th/5th graders) on the impacts we have on sharks and the marine environment, generally. Through the continued research, the future work will expand the knowledge base regarding the challenges sharks face and how the global community can better protect and preserve them, while continuing to support educating our youth.

53. *Using Machine Learning to Predict Prices of Credit Default Swap (CDS) Contracts*
Terrence Zhang and Mahendrarajah Nimalendran, University of Florida

Credit Default Swaps (CDS) are contracts that insure one party against default in an underlying security, usually a bond. Therefore, the price of CDS reflects the perceived risk of default in an underlying security. This project applies support vector machines (SVM) to the prediction of CDS prices across time. Previous research applying SVM to CDS price prediction used historical CDS prices as input features. Several new features are proposed and applied in this project. Tests over a period of several years, across a group of CDS time series, indicate that a combined model which uses the new features in addition to historical CDS prices outperforms models using historical CDS prices only.

54. *Communication, Surveillance, and The Red Scare.*
Katherine Shapiro and Katherine Shapiro, Florida State University

In the age of the Red Scare and radical anti-communist religious groups, surveillance included the possibility of blacklisting, loss of employment, and social exclusion. Surveillance was manual and paper-based, meaning that much of the information gathered was not done through advanced, government technology, but gathered through private citizens and organizations who worked within a complicated web of social connections to expose a citizen. This paper, currently in progress, will explore archival evidence of how this complex network of private persons, independent of the government, was used to expose “un-American” citizens. This research project aims at mapping how citizens connected with one another to find, utilize and transmit information on their neighbors. This project will focus on how independent religious groups, such as Christian associations, churches, religious newsletters, and private citizens collected and distributed information on other private citizens. Saved letters from group leaders such as Verne Paul Kaub with the American Council of Christian Laymen and J.F.K’s Religion Advisor James Wine display this complicated web of “who knows who” that was a major contribution to private surveillance schemes. Examining historical connections, such as these, is key to understanding the needs of current national security, criminal justice, and civil freedom. To assess how information on individuals travels through these social webs, we can thoroughly evaluate public safety procedures, analyze crime patterns, and better protect our citizens from extra-governmental powers that mean to do them harm.

55. *Frequency of Whole Breast Radiation Therapy Following Intraoperative Radiation Therapy due to Criteria Identified by Lumpectomy*
Louis Joya and Thinzar Zaw, University of South Florida

Purpose For selected early breast cancers, intraoperative radiation therapy (IORT) at the time of lumpectomy can be an efficient alternative to fractionated whole breast radiation therapy (WBRT). However, some patients are later recommended WBRT after IORT due to surgical pathologic findings. To understand risk factor identification rates triggering WBRT recommendation, we analyzed adverse prognostic features based on multiple international criteria for suitability for accelerated partial breast irradiation. Methods and

Materials We performed a single-institution retrospective review of all 200 nonrecurrent invasive breast carcinomas that received IORT in 20 Gy to the tumor cavity using a 50 kV photon applicator between January 2011 and December 2015. IORT eligibility was based on the 2009 accelerated partial breast irradiation Consensus Statement from the American Society for Radiation Oncology (ASTRO). IORT was offered as the sole radiation modality to patients meeting 0–1 “cautionary” and no “unsuitable” criteria before lumpectomy. WBRT was recommended after IORT when 2+ cautionary and/or 1+ unsuitable criteria were met after accounting for resection pathology. Results Depending on the selection criteria chosen, rates of WBRT recommendation can vary from 4.5% to 33%. Conclusions WBRT recommendation rates of 30–33% after lumpectomy and IORT are observed when the WBRT indication is a single ASTRO cautionary/unsuitable, Groupe Européen de Curiethérapie–European Society for Therapeutic Radiology and Oncology intermediate/high-risk criterion, or TARGeted Intraoperative radioTherapy vs. postoperative radiotherapy trial protocol recommendation. Alternatively, allowing for re-excision to clear margins and accepting one ASTRO cautionary factor lowered the rate of WBRT recommendation to 9.5%.

56. *Electronic Dance Music Culture's Gradual Shift from Tangibility to Intangibility*
Eden Shurman and Maragaret Steward, University of North Florida

Amid the prior quarter-century, Electronic Dance Music Culture (EDMC) has used various modes of digital communication to serve as an impetus to distribute information to its members and affiliates. This project will derive an ethnomusicological inquiry as to what extent EDMC has shifted from more of a tangible one to an intangible one. Tangible EDMC utilizes card stock flyers to promote electronic music events and brick-and-mortar stores to sell physical copies of pre-recorded music, which has turned into a subculture. Over twenty-five years, being a very early adapter of digital mediums, this evolved, now largely intangible culture uses numerous applications, the world-wide web, and other platforms to live stream video, promote and distribute pre-recorded music, and feature films. The project will begin to determine if casual shifting in information dissemination is deteriorating communal spirit within EDMC, or if intangible communication is a positive catalyst to convert more fans, thereby influencing more people.

57. *Self-Compassion and Personality: A Cross-Sectional Study of Big Five Personality, Moral Reasoning, and Values*
Kaylee Sisneros and Paul Fuglestad, University of North Florida

Self-compassion is a relatively new construct in the psychological literature, and it is comprised of practicing self-kindness, recognizing our common humanity, and being mindful of one’s emotions. Previous research has found that individuals higher in self-compassion benefit from greater psychological well-being, less anxiety and depression, and greater clarity about their own strengths and limitations relative to those lower in self-compassion. While this construct has been investigated primarily in clinical and mental health contexts, very few studies have evaluated its association with certain aspects of personality. In the present research, we conducted a cross-sectional study of self-compassion, personality, morals, and values. Specifically, we examined correlations

between the Self-Compassion Scale, the Big Five Aspects Scale, the Moral Foundations Questionnaire, and the Schwartz Value Survey. Participants completed an online survey comprised of these four constructs. Results indicated that overall self-compassion was negatively correlated with both aspects of Neuroticism (Volatility: $r = -.70$, $p < .001$; Withdrawal: $r = -.58$, $p < .001$), and positively correlated with the Industriousness aspect of Conscientiousness ($r = .38$, $p < .001$), the Politeness aspect of Agreeableness ($r = .19$, $p = .008$), and the Enthusiasm aspect of Extraversion ($r = .22$, $p = .002$). The common humanity component of self-compassion was found to be positively correlated with only the Ingroup/Loyalty factor of moral reasoning ($r = .25$, $p = .001$). No significant associations between self-compassion and values were found. The data suggest that self-compassion may be associated with certain personality traits and morals, but future research is needed to determine the nature of these relationships.

58. *Insurance Coverage and College Students Care: Does Insurance Coverage Effect the Primary Care Provider Choice of College Students and Their Academic Performance?*
Emily Vernet and Melanie Hinojosa, University of Central Florida

Good health is an important predictor of academic success among college students. When college students are in good health and have access to primary and preventive health care they experience better academic outcomes. Many college students with health issues tend to utilize urgent care clinics and emergency department care due to lack of insurance or limitations with their type of insurance. This study examines the effect insurance coverage has on a college student's health care provider choice and the impact the quality of care has on their overall academic performance. The present study will begin with a systemic review of literature and data from several questionnaires will be assessed and analyzed to understand the patterns between insurance coverage, primary care choice, and academic success. After analyzing the questionnaires, data will be collected through an online surveying system from a large university. Twenty in-person interviews will be conducted with health care providers and college student patients both on-campus and off-campus and this data will be transcribed and coded. Factors that affect insurance coverage included financial barriers, parental education, race and socioeconomic characteristics. Students that are covered by private insurance plans are more likely to seek care from a doctor's office over a clinic or emergency room. Students that use school-based health centers tend to have a higher grade-point average (GPA) than those that do not. Absenteeism is linked to lower school achievement and is a common outcome for ill students that are uninsured. Additional findings are soon forth coming.

59. *The Desmids of Arthur R. Marshall Loxahatchee National Wildlife Refuge.*
Katherine Stahlhut and Barry Rosen, University of Central Florida

The Arthur R. Marshall Loxahatchee National Wildlife Refuge, Boynton Beach, Florida, contains approximately 144,000 acres southeast of Lake Okeechobee. The interior portion of the refuge is rainfall driven, resulting in waters with low dissolved ions and slightly acidic. Desmids, a unique, ornate group of green algae loosely associated with submerged vascular plants, were photo-documented for the first time from this location.

The canal system surrounding the refuge contains a high level of ions from agricultural runoff, and intrusion of this water into the refuge interior during high canal water levels may have suppressed some of the desmid population. A transect from the canal to the ombrotrophic interior was sampled every three months and the species present were identified and catalogued. More than 200 species from 31 genera were found. The interior of the refuge had the greatest diversity; however, the areas of the refuge most affected by canal water intrusion, such as the western perimeter, still contained a population of desmids. We postulate that the diversity of desmids in the Arthur R. Marshall Loxahatchee National Wildlife Refuge may be an important refuge for desmids and other freshwater algae in North America, particularly for those species restricted to the subtropical portions of the United States.

60. *Training Nicaraguan Artisans for Online International Sales: A Field-Test of a Scalable Development Policy.*

Beatrice Dain, Zuzanna Szulc, Ellis Magee, Florida State University

Training Nicaraguan Artisans for Online International Sales: a Field-Test of a Scalable Development Policy is a three-part project that tests the effectiveness of a tablet-based online course in enabling Nicaraguan artisans to increase online sales and expand to an international market. We hypothesize the existence of a structural barrier in the access to online marketplaces for artisans in developing countries, and propose a low-cost solution through the implementation of the training courses. Primarily, through a randomized control trial, subjects will be recruited to participate in training sessions to test our hypothesis and solution, as well as Nicaraguan artisans' learning and sales impacts. These training sessions will consist of four weekly hour-long courses instructing subjects on utilizing online marketplaces and reaching an expanded market. By conducting a lab-in-field experiment, we plan to analyze and model artisans' decision processes for entrepreneurial investments. Finally, by conducting a network analysis, we will evaluate how networks contribute to transmitting information through Nicaraguan artisan communities to consider possibilities for amplifying information transmission. The ultimate goal of this research is to provide artisans with the resources to expand their markets and reduce logistical limitations and online barriers. If successful, the course can be scaled into a MOOC (massive open online course) for Spanish-speaking artisans in hopes of expanding online international markets.

61. *How Do Community Gardens Combat Food Deserts?*

Norrelle Walker, Taylor Rentz and Dawn Witherspoon, University of North Florida

A food desert is an area that has an acute lack of access to beneficial resources with an overabundance of detrimental resources. Food deserts are a product of the cyclic interaction between economically disenfranchised individuals and their communities. Approximately 13.5 million people in the U.S. live in a food desert (USDA, 2011). Individuals living in food deserts typically have little income or education and low car ownership. Food deserts lack accessible grocery stores (½ mile - 1 mile walking distance) and reliable transportation, but are oversaturated with fast food restaurants (Althoff, 2016). Incorporating community gardens into food deserts is a solution that addresses the

need for accessible, nutritious food and can eliminate factors that create food deserts. Community gardens encourage self-sufficiency on individual and communal levels by increasing fruit and vegetable intake and exposure, neighborhood security, community involvement (Castro, 2013). To examine the feasibility and success of a community garden in a high risk, food dessert in FL. Methods: Food deserts were identified using ArcGis and the USDA's Food Access Research Map. Data collection included interviews with community leaders and environmental survey data. A community garden owned by the Eastside Environmental Council was selected. The community garden was developed using sustainable soil regenerative techniques and local foods. Community members must volunteer in the garden on weekends to obtain education about the system, before harvesting food for themselves. A proposal to harvest and deliver food from the community garden to local elderly is being developed.

62. *Determining A Marine Sponge Extract's Ability to Inhibit the Growth of Pancreatic and Colon Cancer*

Emily Warner, Christine Theodore and Jeffery Fasick, University of Tampa

In an attempt to discover novel, potentially life-saving cancer treatments, we have studied the ability of marine sponge extracts to inhibit the growth of both pancreatic and colon cancer cells. Since marine sponges have no tangible method of out-competing other marine life for space and resources, it is hypothesized that marine sponges may excrete a growth-inhibiting compound. Thus, our goal is to isolate that compound and determine if it also may affect the growth of various tumor cell lines. Firstly, MTT assays were used to determine the precise affects of each sponge extract on human embryonic kidney (HEK) cells. 2 µl of extract were added to each well of a 96 well plate containing a final volume of 100 µl/well and a serial dilution was done to measure the cell growth inhibition at various concentrations. One extract in particular, MC16N, inhibited the growth of HEK cells at a concentration of 25 µg/µl. Next, we tested the ability of the before-mentioned extract to inhibit the growth of Capan 2, LS174T, and TC-71 cells. Our goal is to determine which, if any, cancer cell lines are inhibited by the marine sponge extracts by fractionating the extract and testing the fractions against the tumor cells to determine the specific compound that inhibits cancer cell growth.

63. *The Gap in Support for Same Sex Adoption*

Jade Tally and Natasha Christie, University of North Florida

There is an extensive amount of research on gay rights issues, but the focus resides on those of gay marriage, leaving much less to be known about gay adoption. The idea of marriage as a whole is fluid with family building in most societies. For gay couples, this is usually accomplished by means of adoption. This research reveals how much and why individuals are influenced by gender and religiosity when it comes to their support for gay adoption. The control variable is gender, the independent variable is religiosity, and the dependent variable is individual support for gay adoption. Through the creation and analysis of a cross tabulation using these variables from the NES 2008 codebook, it was found that females are more likely to support gay adoption than males, and individuals who are more religious are less likely to support gay adoption. These relationships exist

because males tend to carry more sexual prejudices than females, and because religion plays a major role in individual actions and attitudes. By bringing more attention to gay rights issues that are overlooked, this project will contribute to future research that could aid in perpetuating advancements towards overall gay civil liberties.

64. *Examination of Four Types Of Pain Tolerance In Relation To A Lifetime History Of Suicidal Behavior*

Olivia Teasdale, Jessica Nelson and Megan Rogers, Florida State University

This study is aimed towards investigating the link between physical pain tolerance and suicidal tendencies and self-injurious behaviors. The purpose of this study is to examine which type of pain tolerance is most strongly related to suicidal behavior. Participants (n = 45, data collection is still under way) in this study completed a battery of online questionnaires, four pain tolerance tasks to assess the four types of pain tolerance, a distress tolerance behavioral task, and a clinical interview assessing their current and lifetime self-injurious thoughts and behaviors. The pain tolerance tasks included administering hot and cold temperatures, increasing levels of shock, and pressure, while recording individual pain thresholds and overall tolerance. As data collection is still ongoing, results are not yet available; however, preliminary findings will be available soon. Overall, we predict that lower pain tolerance will be linked with participants that exhibit a history of suicidal tendencies and behavior.

65. *Health Insurance Status and Diabetes Management Practices Among Black Adults in the U.S.*

Luderve Rosier and Brittny Wells, University of Central Florida

The purpose of this study is to investigate the relationship between health insurance status and diabetes management (in terms of medication adherence and physical activity levels) in Black adults based on socioeconomic factors. Methods: Data will be harvested from the Sample Adult Questionnaires of the National Health Interview Survey (NHIS) between the years of 2010 and 2016. The survey questions that will be harvested include information about the participants' income, education level, insurance status, diabetes diagnosis, medication therapy and physical activity levels. This study will employ the most recent version of the Statistical Package for Social Sciences (SPSS) software and the association between diabetes management and socioeconomic factors will be analyzed using chi-square analysis. It is hypothesized that black adults who are uninsured, lower income, and less-educated will report lower adherence to medication and lower physical activity participation, compared to their insured, higher income, and higher-educated counterparts. Future research will benefit from this study as it will provide more generalizable information due to the use of a national dataset.

66. *Nasal Microbiome Analysis in Macaca nemestrina Reveals Potential Competitors of Staphylococcus aureus*

Ryan Skelly and Amy Cole, University of Central Florida

Staphylococcus aureus (SA) is a bacterial species that has the ability to turn a routine surgical procedure into a life-threatening infection. The lethal characteristics of SA are highlighted by its ability to resist methicillin antibiotics, while remaining benign in the nostrils of 20% of the population. It has been documented that SA nasal carriage relies on the presence of certain commensal bacteria that cohabit the nasal vestibule. Using the macaque as a model for the human nasal carriage of SA, we have discovered that *Corynebacterium* and *Bacillus* species displace SA when our subjects are treated with mupirocin antibiotics. After week one (post mupirocin), only fifty percent of the nasal population was colonized by Staphylococcal species. The remaining half mostly contained *Bacillus* (23.33%) and *Corynebacterium* (20.00%). Whereas, week three (post mupirocin), almost ninety percent of the nasal vestibule was colonized with Staphylococcal species; Most of which were *S. epidermidis* (29.17%) and *S. hominis* (20.83%). However, our previous data is based on culturable methods that we believe aren't telling us the entire story. With the use of Illumina and Pacific Bioscience next generation sequencing platforms, we plan to further correlate which species of bacteria inhibit SA colonization as well as which species facilitate its colonization. In its entirety, this study will provide a detailed analysis of the nasal vestibule microbiome and how different inhabitants interact with SA. Finally, with more data, we will empirically determine which microorganisms aren't as transparent as those found using culturable methods.

67. *Constraint Programming Mapping and Evaluation Techniques Applied to Critical Unmanned Aerial System Decision-making*

Courtney Thurston and Richard Stansbury, Embry-Riddle Aeronautical University

Constraint-satisfaction programming (when modeled, known as a constraint-satisfaction problem (CSP)) is a method that can be applied to choose appropriate flight path segments for the operation of unmanned aerial systems, maximizing the safety of their flight path while remaining agile and able to avoid obstacles throughout navigation. CSPs provide a framework in which multiple conflicting constraints (such as no-fly zones found over airports, military bases, et cetera) imposed upon the unmanned system can be resolved in such a way that the unmanned system will not only perform correctly, but also will meet or exceed its performance expectations. Constraints also provide an agile way to allow the system to change directions depending on unforeseen circumstances such as obstacles (tall buildings, etc), avoiding the problem of not being able to re-route, which occurs when you use hard-coded routes. By incorporating performance objectives into the our constraint model, the research project result is capable of rationally guiding UAS through a flight path that best meets its current needs and goals. An unmanned system must select tasks, such as certain flight segments and the overall route requirement (must get from point A to point B), and configure them accordingly within its hardware and software to truly be autonomous. A task is any unmanned systemic action or series of actions to achieve some state or goal. These set of tasks to choose from

may be derived from a variety of sources; the tasks could stem from a queue of requests from users or companies.

68. *Rhetorical Analysis of Statements Made by United Airlines After Forcible Removal of a Passenger.*

Alyssa Smith and Jelena Petrovic, Stetson University

The purpose of this study is to rhetorically analyze the devices and strategies used in the statements made by United Airlines CEO and public relations representatives directly following the forcible removal of a passenger from an overbooked flight on April 9, 2017. The analysis will dissect the public apologies and statements made by United's public relations representatives and CEO Oscar Munoz directly following the event and societal outcry compared to the apologies made later on. The study will identify strategies used in the public statements based on William Benoit's image restoration theory as well as Ware and Linkguel's methods used in Apologia. The study shows the techniques used in corporate apologies and presents a clear evolution of how an apology changes directly following a negative incident to the end. A study of image restoration techniques used by United airlines raises awareness to the techniques used by corporations in order to protect their social perception. This study is very important and applicable in our technological society where online face work and crisis management is needed in a timely and effective manner in order to properly maintain a positive corporate and personal image.

69. *Magnetically Triggered Release of Protein*

Omani Tuitt Olivia Lanier, John Dobson, University Of Florida

This study synthesized polycaprolactone microparticles containing magnetic nanoparticles (MNPs) and bovine serum albumin (BSA) as a model protein to create a particle that could help heal non-union bone fractures. In the future, these microparticles would be grafted onto bone fracture plates with encapsulated placental proteins for wound healing, and an alternating current would be applied causing the MNPs to melt the polymer coating and thus release the proteins on demand. The MNPs were coated with oleic acid to make the synthesis easier. The microparticles were fabricated using a method called double emulsion where the polycaprolactone is dissolved in organic solvent with the MNPs and homogenized to encapsulate the MNPs and protein. After the manufacture of the microparticles, the amount of protein encapsulated was measured. A release study was then performed to ensure all of the protein was not released prior to heating. It was found that there was no protein release from the microparticles under magnetic field application which may be a result of protein being denatured due to the excessive heat used in experimentation or MNPs not heating up enough to completely melt the polymer. Future tests include using a fluorescence test without protein to determine if the protein is being trapped inside the polymer due to hydrophobic interactions. If confirmed, alternative materials will be considered.

70. *No Title*

Alexandra Urdaneta and Vijaya Iragavarapu-Charyulu, Florida Atlantic University

Breast cancer (BC) is the second most common cancer worldwide amongst women. Often times, BC will metastasize to secondary organs, worsening patient prognosis and increasing mortality rates. Previous studies have determined tumor cell-derived exosomes to be linked to the progression of cancer metastasis. However, the detailed mechanisms of the relationship between exosomes and metastasis have yet to be determined. A standardized method for the efficient isolation of viable, pure exosomes is necessary in order to conduct further studies. Ultracentrifugation (UC) is the current “gold standard” for exosome isolation; however, the use of high speed centrifuge has negative effects on the integrity of isolated exosomes. New precipitation kits can isolate exosomes while avoiding the high speed required for UC; therefore, precipitation kits are more promising in the isolation of viable exosomes. Utilizing western blotting and flow cytometry, we propose to qualitatively and quantitatively assess the concentration, viability and purity of exosomes isolated from 4T1-712-24 murine BC cells by three methods: UC, ExoQuick-TC Exosome Precipitation Solution (EQTC), and Total Exosome Isolation Reagent (TEIR). We hypothesize that, when compared to UC and TEIR, EQTC will be found to be the most successful in yielding viable exosomes in high purity and concentration. Identifying the most efficient exosome isolation method is a key step to standardizing the study of exosomes, and therefore, critical to studying the relationship of exosomes in metastasis.

71. *Peace and Trauma in The Fifth Season*

Alena Flick and Farrah Cato, University of Central Florida

My project explores N.K. Jemisin’s award-winning novel *The Fifth Season* as a study in the complexities of personal and cultural trauma. Informed by the works of trauma theorists such as Laurie Vickroy and Nancy Peterson, I use visual artwork as a means of reflection and analysis to illustrate the recursive nature of trauma present in Jemisin’s work. The novel explores systemic racism, primarily through the experiences of Essun, a middle-aged, dark-skinned mother who has lost two children. Jemisin’s alternate world of the Stillness shows the damage wrought by an uninterrupted cycle of abuse that is simultaneously cultural and individual, personal and impersonal. *The Fifth Season* is a story of marginalization and oppression, but it has moments of real gentleness and joy amidst the horror. At the heart of this research exercise is a question: if something good ends horribly enough, can it ever again truly be thought of as ‘good’ at all? The nature of the trauma that Jemisin depicts, as in all cycles of abuse, is that it is consistent but not constant, and it is never clean. The good times and the bad are not clearly divided, and the moments of peace never preclude the coming pain—or vice versa. This is a novel concerned with fracturing and fragmentation. I consider the dissociation, the confusion, the “not-all-here” quality Jemisin herself describes. I argue that Jemisin’s *The Fifth Season* shows us the pattern of a life that is characterized by the blurring of peace into trauma and back again.

72. *Project Nautilus: Lowering the Cost of Oceanic Research*

Devon Vail, Peter Demetres, Stephen Hanrahan, Andrew Hendersor and Shuo Pang,
Embry-Riddle Aeronautical University

According to the National Oceanic and Atmospheric Administration (NOAA) less than five percent of the ocean has been explored. One of the main obstacles to oceanic research for small institutions is the enormous cost of owning and operating a research vessel. Many underwater robotic vehicle cost millions of dollars to make and require a manned research vessel, costing over \$80,000 a day to operate, to accompany them. For the 2017 fiscal year, the National Oceanic and Atmospheric Administration requested an increase of over five hundred million dollars for Fisheries Science and Management. While this budget incorporates many things, a large portion of it was dedicated to the operation of NOAA's research vessel fleet. Thus, it is the goal of this project to reduce those costs and consolidate as many aspects of the research fleet as possible into one AUV system. For the first portion of the project's duration the project members will be primarily concerned with the successful construction and testing of the AUV. During this period, a team of select members will be researching automation of the vehicle as well as long-range communication and data transmission. The vehicle will be composed of several systems working in unison and as such, each system will have a corresponding sub-team. The purpose of this project is to pioneer methods for ocean exploration and documentation so that we might achieve a better understanding of the largest ecosystem in the world: the ocean.

73. *Design and Synthesis of Novel Analogues of Aza-Podophyllotoxin As Tubulin-Polymerization Inhibitors*

Charles Shearer and Stephane Roche, Florida Atlantic University

The aim of this study was the synthesis and lead structure selection of some anti-leukemic agents from a library of 4-aza-podophyllotoxin analogues (APTs). To this end, a detailed comparison of several modified multicomponent reactions with various catalysts was performed to increase yield efficiency in the synthesis of APT-derivatives. Herein we report a scalable, modified multicomponent reaction using a novel aniline catalyst as a more general route to rapidly construct a library of APT analogues. Using these novel reaction conditions, a series of APTs with a thiocarbonyl modification of the lactone ring was synthesized in high yields. Additionally, an analysis on APT's molecular interactions within the colchicine binding pocket on the tubulin as well as interactions between the alpha- and beta-subunits of tubulin have led to the development of novel analogues and synthetic routes. These novel APT derivatives have been crafted with linkers and capped with binding motifs to interact with the GTP-magnesium phosphate site of the alpha-tubulin. The results of these modified multicomponent reactions in tandem with the novel synthetic routes can lead to unexplored APTs with enhanced antimitotic potency and specificity for the development of anticancer drugs.

74. *Synbio Approaches to Immunomodulatory Breast Milk Derived Commensal*
Max Van Belkum and Mansour Mohamadzadeh, University of Florida

Formula has long been considered a viable alternative to breast milk as a means of providing nourishment to infants. However, according to a meta-analysis of over 9000 abstracts, formula fed infants are at a greater relative risk of a plethora of diseases, including but not limited to: gastroenteritis, severe lower respiratory tract infections, obesity, type 1 and 2 diabetes, childhood leukemia, sudden infant death syndrome, and necrotizing enterocolitis (NEC). However, encouraging breast-feeding has proven challenging, as only 49% of infants were breastfed for 6 months in 2011 as recommended. Alternatively, our lab looks to augment infant formula in order to improve the health of those not able to be breastfed. P. UF1 is the bacterium subspecies of *Propionibacterium freudenreichii* that we isolated from the fecal samples of premature human infants that have been fed human breast milk but not in premature infants that had been formula fed. Since then, the purpose of the lab has largely been to elucidate the function of the bacterium. We showed PUF1 to have probiotic effects in multiple scenarios in mice, including markedly mitigating inflammation and drastically increasing survival during a necrotizing enterocolitis (NEC) disease in neonatal mice, a model of one of the leading killers of preterm human infants to date. We mechanistically linked the probiotic effect to a surface layer protein on our bacterium communicating with a C-type lectin receptor of the dendritic cell, and documented the marked anti-inflammatory and regulatory affects our bacterium has on the cytokines and T cell differentiation.

75. *Documenting the Past in Three Dimensions*
Chase Van Tilburg and Lauren Weingarden, Florida State University

This research project focuses on the Three-Dimensional Modeling and Digitization of the John House Stereograph Collection In order to enhance the accessibility of and push the cards into a 3D digital plane. This would grant online viewers the ability to digitally experience the stereograph cards in the round. A partnership with the Florida State University Morphometrics Lab under the Department of Scientific Computing has been created to accomplish this task. Moreover, through virtual and augmented reality, a digital method of viewing the digital stereo cards stereoscopically, without the need for the physical stereoscope is currently under development. This will be applied to a narrative about the advancement of the viewer experience in museology. The end goal of this research is twofold: to create a digital repository of digital three-dimensional models for each stereograph in the collection of historical images, and more broadly, to investigate and experiment with the use of contemporary technologies such as virtual reality and three-dimensional modeling to enhance visitor experience and digital art historical practice within the museum exhibition setting.

76. *Age-Related Susceptibility in Cyber Social-Engineering Attacks*
Paul Talty and Natalie Ebner, University of Florida

Fraud costs older adults billions annually. Financial abuse constitutes one of the most common forms of elder mistreatment, with devastating consequences. A rapidly aging population, combined with age-related changes in decision making, means that fraudulent activities targeting older adults is emerging into a public health epidemic. Technological advances are opening novel avenues for fraud, such as phishing emails that lure computer user into visiting websites that procure personal information or malicious downloads. These attacks can apply life domains (e.g., health, finances) and psychological weapons of influence (e.g., scarcity, reciprocation). We adopted an age-comparative approach to examine use and efficiency of domains and weapons in social-engineering attacks. Study 1 collected young and older adults' spam emails and content coded them by domain and weapon. Finances and reciprocation were the most frequently employed domain and weapon across both groups. Suggesting age-targeted attacks, health was more commonly used in older adults' spam. Study 2 recorded browsing activity over 21-days during which phishing emails that systematically varied in domains and weapons were simulated. Older women were the most vulnerable group to phishing. Further, young but not older adults adjusted their susceptibility as the study progressed. While young adults were most susceptible to scarcity, reciprocation was most effective in older adults. There also was a discrepancy, particularly among older users, between self-reported susceptibility awareness and behavioral susceptibility. These results advance understanding of age-related susceptibility in social-engineering attacks with potential to inform development of preventative tools and on policy change to reduce victimizations among aged individuals.

77. *Insane Clown Posse and the Liminal World of Carnival, Class, and Juggalo Family*
Magdalene Taylor and Queen Zabriskie, New College of Florida

In attempting to understand the relationship between class and cultural consumption, theorists including Pierre Bourdieu and Dick Hebdige have associated artistic taste with social status. However, this argument fails to consider the agency of lower class consumers and the empowering potentials of subculture. This research attempts to address these topics through an exploration of Juggalos, the subcultural following of rap group Insane Clown Posse. Analyzing lyrics, documentaries, and other forms of Juggalo media as well as interviews and field notes conducted at the 18th annual music festival The Gathering of the Juggalos, I explore the ways in which class identity is represented and reshaped through the subculture. I focus on three major themes in my research: the function of the carnivalesque and performative horror in creating a subcultural identity, the liberatory bonds of community and chosen-kin networks in Juggalo "family," and the ways in which these two themes work to create a Juggalo habitus & lifeworld. This project works to shift the dialogue regarding low/popular culture in class contexts and to redefine mainstream analysis of this much-maligned group. Ultimately, Juggalo subculture is a community through which lower class individuals can subvert status hierarchy while participating in a world-making process of their own.

78. *A Novel Lifecycle Extension Plan for the Efficient Usage of On-Orbit Post-Consumer Assets*

Jaclyn Wiley, Andrew Bronshteyn and Wes Lewis, Embry-Riddle Aeronautical University

Asteroid mining is a potential form of commercial space industry, and significant amounts of research have gone into the feasibility of that activity. Less research has been done on what happens to the asteroid post-mining; the two primary end-of-life scenarios for the remains of a mined asteroid are not ideal. The remains could be deorbited, which entails complex technical and legal challenges, or they could remain in orbit, which could lead to collisions and a general increase in space debris. This proposal outlines a solution for the post-consumer asteroid issue which avoids creating more space debris and the risky business of deorbiting. This solution is to use the post-consumer asteroid shell as a shelter for delicate equipment or as a “garbage can in space,” which would hold the remains of defunct satellites until the time they could be more safely deorbited. The shell of the asteroid would provide protection from space debris impacts and some radiation. This proposal also discusses some of the major technical and legal challenges that this solution would face, and how stakeholders could potentially address them. More research is required to gain a better understanding of the challenges and opportunities that this proposal faces, which can be conducted during the long-term development of commercial asteroid mining technologies.

79. *Middle Ear Response to Varying Intracranial Pressures Using Tympanometry*

Leslie Simms, Sierra Condo, Richard Sandler, and Hansen Mansy, University of Central Florida

Hydrocephalus is a medical condition characterized by an accumulation of cerebrospinal fluid (CSF) in the ventricles of the brain, typically causing an increase in intracranial pressure (ICP). An increased ICP can result in headache, nausea, vomiting, and even death. To combat the effects of hydrocephalus, brain shunt systems are often implanted in the brain to drain excess CSF. Continuous monitoring of ICP in patients with hydrocephalus is crucial for effective management. Currently, clinical ICP measurement approaches are invasive and are performed using intraventricular catheters placed through a drilled hole in the skull. A noninvasive method for home monitoring of ICP may be advantageous. There is literature evidence that ICP can be transmitted to the auditory system via the cochlear aqueduct. Therefore, an increase in ICP may increase the auditory system stiffness. Tympanometry is a common procedure for measuring the compliance of the middle ear at different external ear pressures. This research aims at exploring the correlation between ICP and the parameters that can be measured by tympanometry. In the current study, five subjects participated after informed consent. An ICP increase was induced by gradually tilting the subject from a standing position (90° tilt) to a head down position (-80° tilt). The results suggested that the peak pressure measured by the tympanometer increased as tilt angle changed from standing to a head down position ($R^2=0.74-0.92$). A stronger correlation ($R^2=0.74-0.92$) was seen for supine to negative tilt angles. These results suggest that the increase in ICP may be detectable by tympanometry.

80. *Physicians' Perspectives on Early Screening and Diagnosis of ASD: Challenges and Solutions in Diverse Communities.*

Kayla Wagler, Abigail Delehanty and Amy Wetherby, Florida State University

Screening for and diagnosing children with autism spectrum disorder (ASD) is a unique challenge for primary care physicians. With several different screening tools and guidelines available, it is difficult to gauge the extent to which physicians utilize them and find them effective. Empathy for families and familial mental health care are also important factors to consider. Several barriers exist in the care process, including time constraints, parental compliance, access to resources, and lack of training in the characteristics of ASD. The aim of the present study was to more thoroughly identify these barriers and establish reformed resources available to primary care physicians in response to their needs. Several primary care physicians were interviewed about these specific barriers and potential improvements to the process based on their professional experience. Their responses were then qualitatively coded for positive and negative themes in the perception of the diagnosing process and the underlying attitudes physicians had about resources available to them. The interviews revealed the psychological effects diagnoses have on families, a lack of preparedness sensed among the physicians, ambiguous understanding of the physician's responsibilities in the diagnosis, and a need for a reformed approach to empathizing and effectively communicating with parents. These results suggest a need for a team-based approach connecting specialists, such as case managers, to the physicians, comprehensive tools for ASD education that are effective and feasible for physicians to complete, and a compassionate care approach focused on mental health in the formation of the family-physician partnership.

81. *Analysis of the Expression of Basigin, Embigin, and Neuroplastin in the Mouse Olfactory Bulb*

Hannah Watts and Judith Ochrietor, University of North Florida

A recent study of the mouse olfactory system indicated that members of the Basigin subset of the immunoglobulin superfamily are expressed throughout the olfactory bulb. While members of this subset, which include Basigin, Embigin, and the Neuroplastins, are typically expressed in specific, non-overlapping locations within a tissue, it was observed that Embigin and Neuroplastin expression overlaps within the olfactory bulb. Embigin is known to have the greatest expression in neural tissues during embryonic development and Neuroplastins are important for synaptogenesis. We therefore hypothesized that in the olfactory bulb, Embigin expression in developing neurons is replaced by Neuroplastin expression in mature neurons. The purpose of the present study was to determine if Embigin expression is greater in younger olfactory bulb samples and then decreases overtime, with a concomitant increase in Neuroplastin expression. RNA was isolated from mouse olfactory bulbs ranging in age from 1 week to 8 weeks and subjected to quantitative reverse transcription-polymerase chain reaction using primers specific for Basigin, Embigin, and Neuroplastin. Gene expression was normalized using primers specific for 18s rRNA. It was determined that Neuroplastin expression was greater than Basigin or Embigin at all ages tested, with its greatest expression at 1 week

of age. Additionally, Embigin expression remained low at all ages tested. The data does not support the hypothesis that Embigin expression is replaced by Neuroplastin expression in maturing olfactory bulb neurons. It is likely that the two proteins have different, specific roles within the olfactory bulb, but are expressed in the same cells.

82. *Preventing Suicide in At-Risk, PTSD-Affected Military Populations*

Christina Hayworth and Wen Li, Florida State University

Post-traumatic stress disorder (PTSD) is a mental disorder common in military combat veterans that often leads to suicide. In fact, the suicide rate of military veterans is almost double that of the civilian population. One PTSD hypothesis is that the disorder is exacerbated by over-activity in the visual cortex; it has been shown that alpha brain waves are significantly lower in the visual cortex in these PTSD-affected veterans compared to the civilian population. Alpha waves are inhibitory, meaning that lower levels signify brain over-activity. Transcranial alternating current stimulation (tACS) was investigated to treat PTSD by increasing the alpha oscillations in the visual cortex, reducing the effect of PTSD. Participants were first screened for biological, social, and psychological risk and were then assigned to either a sham or an active tACS treatment. The study operated on a six-week paradigm, in which the participants underwent a resting-state task (monitored with an EEG) and received twelve total "tACS" treatments (either true or sham stimulation), 30 minutes each, and also participated in a mood survey and other P-50 paradigm tasks each week. During the third and sixth week, participants were re-assessed using the original screening for PTSD. After the third week, participants receiving sham treatment began receiving active treatment, so all participants received tACS during the second half of the study. The results are expected to show that alpha oscillations and the scores on the PTSD screening tests will increase with active tACS treatment and remain the same with sham tACS treatment.

83. *Stimulation and Modulation of Natural Killer Cells with Exosomes*

Kari Shaver, University of Central Florida

Natural Killer (NK) cells are powerful effectors in immunosurveillance that comprise a small percentage (5-15%) of circulating blood lymphocytes. NK cell based immunotherapies have demonstrated potential as cancer treatments, however, NK cells must be first preferentially expanded from peripheral blood mononuclear cells (PBMCs) for therapeutic use. Current in vitro expansion methods include co-culturing NK cells with genetically modified feeder cells or plasma membrane nanoparticles derived from feeder cells, in conjunction with soluble cytokines such as IL-2. Exosomes – small vesicles carrying miRNAs and proteins – secreted by feeder cells may provide another novel way to selectively expand NK cells. This method has also the potential to be used to deliver regulatory miRNAs to modulate gene expression in NK cell to enhance their cytotoxicity if exosomes are uptaken by NK cells. To test this hypothesis, exosomes were isolated from K562-mb21-41BBL feeder cells (EX21) and stained with A647. NK cells were cultured with varying concentrations of EX21 and achieved 1000-fold expansion of NK cells from unsorted PBMCs over 21 days. Confocal microscopy imaging revealed EX21-A647 in the cytoplasm as well as on the surface of NK cells, indicating exosomes

are internalized by NK cells in vitro. NK cell expansion using exosomes shows great potential to expand and possibly edit NK cells for therapeutic use.

84. *Factors That Affect the Detection of Wolbachia in Mosquitoes and Nematodes*
Andrew White, Jennifer Bess, John Whitlock, Hillsborough Community College

Wolbachia are bacterial endosymbionts found in mosquitoes and nematodes and live within the gonads of their host affecting their reproductive cycle. It has been discussed that *Wolbachia* may be used to help control the populations of certain disease vectors. PCR detection of *Wolbachia* using both whole cell and DNA extraction methods have given positive results. We hypothesize that many factors affect the detection rate from host samples. This can include age of the sample, how it was kept, extraction method, and the quality of the purified DNA. In this study, DNA was extracted from mosquitoes and heartworms, then targeted using the *gyrA* gene to detect *Wolbachia*. PCR was successful at producing repeatable, positive results in many genera of mosquitoes. The presence and identity of host species' DNA was confirmed using the cytochrome oxidase gene. Detectability was lower in aged samples that were not preserved and from refrigerated specimens. Cytochrome oxidase PCR was successful in confirming the presence of DNA in heartworms that have been chemically preserved for over fifteen years and from frozen specimens. Whole cell PCR was able to amplify target sequences, but detection rates were higher from purified DNA. Overall, factors such as sample storage and DNA template preparation effect detectability while the target gene choice influences the potential for strain differentiation. Identifying these factors allows us to methodically screen future specimens.

85. *Determining the Relationship of Morphologically Distinct Croaker Fish Individuals to Other Micropogonias Populations*
Bridget Vincent and Eric Hoffman, University of Central Florida

Atlantic Croaker (*Micropogonias undulatus*) is an economically important fish found in western Atlantic waters from Massachusetts to Louisiana and the Whitemouth Croaker (*Micropogonias furnieri*) is commonly found in the coastal waters of the Caribbean and along the east coast of South America. *M. undulatus* and *M. furnieri* are both known to coexist in the southern part of the Indian River Lagoon (IRL), a biodiverse estuary system on the east coast of Florida. In this region, a population of Croaker has been observed whose species cannot be identified using morphometric methods. In order to further investigate this population, we use genetic tools to determine the identity of these individuals. Samples of individuals within this population, as well as individuals in a known *M. undulatus* population, were taken and their genetic and morphological characteristics were compared. DNA was extracted from each sample in order to amplify mitochondrial genes. Using this genetic data, species trees will be constructed to determine the genetic relationship of the morphologically distinct population to *M. undulatus* and *M. furnieri*.

86. *Terminator Planes: Self Healing Aircraft*

Guadalupe Zepeda, Margaret Scheiner, and Okenwa Okoli, Florida State University

Airplane crashes are not as frequent as when commercialization first began in the 20th century, but occasionally we hear of planes malfunctioning midflight and having to make emergency stops. Light-activated self-healing polymers have the potential to prevent future aircraft tragedies by closing and healing cracks while the structure is operational. In-situ damage detection is achieved through embedded triboluminescent (light emitting) crystals which are activated by mechanical impact or when they come in contact with a crack. The light emitted from the triboluminescent crystals then activates the self-healing polymer which will propagate through the crack to close and heal it. In theory, the TL crystals and light-activated self-healing polymers will both be embedded within the host structure matrix meaning no exterior stimulus nor human intervention is required for to initiate repair. This technology could save human lives in the future, decrease airplane downtime due to in-depth inspections, and increase profits. The purpose of this research is to investigate cure kinetics of self-healing polymers activated by EuD₄TEA and ZnS:Mn triboluminescent crystals. Specialized photo-initiators initiate polymerization in response to visible light, enabling self-healing via triboluminescence. The degree of cure is measured using methods such as differential scanning calorimetry (DSC), Fourier-transform infrared spectroscopy (FTIR), and dielectric analysis. The end goal of this project is to create a structural polymer composite which is capable of self-healing via embedded triboluminescent crystals.

87. *The Role of Grit in a Self-directed Weight Control Intervention*

Molly Wright and Paul Fuglestad, University of North Florida

This study investigated the relationship between Grit (individual differences in perseverance and passion for long-term goals; Duckworth et al., 2007), and the effectiveness of a health promotion and weight control intervention. Participants completed an initial online survey consisting of the Grit scale, demographic questions, and health behavior questions, along with a baseline body measurement session. Participants were randomly assigned to the control group (n=34) or one of two treatment groups (n=57). Those assigned to the treatment groups completed a 1 hour educational session and received intervention packets, while those in the control group only completed study assessments. All participants completed another survey at 3 months and self-reported their weight. A mixed-model ANOVA of weight change from baseline to 3 months was conducted using treatment group (treatment vs. control), Grit score, and the interaction of treatment group and Grit score as predictor variables. A significant interaction was found between participants' Grit Score and treatment group on weight change (p=.034). Participants who scored higher in Grit lost more weight in the treatment conditions compared to those who scored lower (3.63 lbs. loss versus 0.86 lbs. gain); regardless of Grit, participants tended to gain weight in the control condition. In addition, analyses using each of the Grit subscales found that the Grit Consistency subscale interacted with treatment condition (p=.036), but the Grit Effort subscale did not (p=.34). The results suggest that the qualities unique to the Grit consistency subscale may be worth considering in the context of health behavior change interventions.

88. *Neural Regeneration in an Invertebrate Related to Humans*

Anuhya Yedanaparthi, Daniel Knap, Olga Zueva and Vladimir Mashanov, University of North Florida

Many organisms can regenerate their damaged tissues, but there is a decline of regenerative capacity in vertebrates, including mammals. Isolated reports suggest that a group of invertebrate chordates – cephalochordates - can regenerate. However, neural regeneration in these organisms has not been studied. This project focuses on the central nervous system regeneration in the amphioxus, *Branchiostoma floridae*. Two types of injury were conducted: one involved a complete transection of the nerve cord at the mid-body level, and the second treatment injured both the nerve cord and the notochord. The animals were examined at multiple time points post-injury from day 1 to 49. Active regrowth was first seen on day 28 for the 1st injury type (only the nerve cord damaged). The two stumps on either side of the wound formed outgrowths, which started extending towards each other across the injury gap. The two stumps continued growing on day 49 (the last time point examined), but have not re-connected yet. In the 2nd injury type (both the nerve cord and notochord damaged), the notochordal lamellae (cells filled with myofilaments) disappeared at the injury site and got replaced by loose mesenchymal cells after day 21. The connective tissue envelope of the notochord reconnected across the injury gap. On day 42 some of these animals showed complete reconnection of the nerve cord. Therefore, the nerve cord reconnected faster in the 2nd injury type than in the 1st injury type. In conclusion, the rate of regeneration in amphioxus differs based on the injury type.

89. *A Quantitative and Geospatial Analysis of a Peer-Enforced Tobacco- and Smoke-Free University Campus Policy*

Shahriar Zamani and Sarah Powell, University of South Florida

This study aimed to analyze the implementation of the Tobacco-Free policy and the views of the campus community towards the policy at the University of South Florida in Tampa. Additionally, this study assessed the geospatial violations of the policy on campus. The methods used include a campus-wide cross-sectional survey and observational geospatial data of policy violations. The survey collected information regarding knowledge and opinion of the policy as well as intention to intervene if policy violations were observed. The geospatial data are collected using the ArcGIS Collector application. Policy violations include cigarettes, cigars, smokeless tobacco, hookah, or electronic cigarettes. Violation points are mapped and analyzed using ArcGIS Pro to determine hotspots of tobacco-free violations. The cross-sectional survey indicated a lack of knowledge of the Tobacco-Free policy at the University. In addition, a lack of intent to enforce the policy if violations were observed was identified. The geospatial data analysis revealed locations of tobacco use on campus after a total of 72.4 hours were spent on observation and data collection. The final map created on ArcGIS Pro shows a centralized mean and median along with no apparent directional distribution. Therefore, no hotspots could be identified. Even with no identified hotspots, the created map visualizes locations where policy enforcement needs strengthening. Since violations were

occurring campus-wide, there needs to be more focus on policy education and enforcement. With the growing number of colleges and universities creating tobacco-free policies, new and innovative evaluation methods are needed to ensure such policies are effective.

90. *Self-Monitoring and Eating Disorders: Protective versus Acquisitive Motives for Anorexia Nervosa*

Kaela Robertson, Sarah Green, Sarah Cozza, Louanne Hawkins and Christopher Leone, University of North Florida

Anorexia nervosa is a disorder in which individuals seemingly engage in dysfunctional dieting and exercise (Brockmeyer et al., 2013). This disorder may be related to self-monitoring (Fuglestad & Snyder, 2010; Snyder, 1974). Acquisitive self-monitors engage in impression management to obtain reward (e.g., attractiveness to others), whereas protective self-monitors engage in impression management to avoid costs (e.g., ridicule for being overweight) (Wilmot, 2015). To assess acquisitive versus protective monitoring, 147 females with anorexia completed the Self-Monitoring Scale (Snyder, 1974). Using the Eating Attitudes Test (Garner & Garfinkel, 1982), participants indicated the extent to which their anorexia reflected fixation dieting, preoccupation with food, and oral control. Using the Eating Disorder Inventory (Garner, Olmsted, & Polivy, 1983), participants indicated the extent to which their anorexia reflected a drive for thinness, bulimia, body dissatisfaction, personal ineffectiveness, perfectionism, interpersonal distrust, a lack of interoceptive awareness, and maturity fears. With only two exceptions, acquisitive self-monitoring was unrelated to participants' motives for anorexia. Protective self-monitoring was related to every motive except oral control. Our findings address two issues. First, scholars have discovered that personality characteristics are connected to anorexia (e.g., Ghaderi & Scott, 2000), and our results concerning self-monitoring (a personality variable) dovetail with this development. Second, some scholars have conceptualized self-monitoring as being comprised of two classes (high versus low self-monitors) (Fuglestad & Snyder, 2010), while others believe it is comprised of two dimensions: acquisitive and protective (e.g., Wilmot, 2015). Our findings are consistent with the latter view.

91. *Shooting through Raindrops with Laser Pulses*

Jasmine Thompson, Matthieu Baudelet, Shermineh Rostami and Martin Richardson, University of Central Florida

A common area of concern in liquid analysis is the precise determination of pollutants and contaminants present in various samples. We are exploring an optical technique for real-time identification of extremely low levels of toxicity in various materials in the environment. This technique is called Laser Induced Breakdown Spectroscopy (LIBS), which is characterized by the interaction of a nanosecond laser pulse with sub-nanoliter aerosol droplets. Subsequently, spectral emission from excited particles liberated from the micro-plasma created of these aerosols, provides unique signatures of their material content. An optical spectrometer is used to detect the signature lines. Our initial experiment used deionized water as the sample for liquid analysis. Moreover, scientific

studies of pure water droplets allows for the measurement of plasma properties, such as electron density and temperature. With this technique calibrated for pure water, liquids containing contaminants were analyzed. Because LiCl, NaCl, KCl, RbCl, and CsCl are alkali metals prominent in common pollutants, they were used for the contaminated liquid analysis. The lowest limits of detection (LOD) for LiCl, NaCl, KCl, RbCl, and CsCl are 1 ppb, 10 ppb, 100 ppb, 500 ppb and 1 ppm, respectively. The results showed a correlation between the ionization potential and LOD. This study demonstrates the use of a simple optical system for the remote real-time detection and analysis of liquids.

92. *Viscous Effects of Ethylene Glycol in the Electrodeposition of Copper in a Cu-Cu Electrochemical System*

Juan Juarez and Anne Donnelly, University of Florida

Electrodeposition is the process by which metal ions are deposited by reduction onto a cathode surface. Different instability phenomena affect how these patterns form and which morphologies are observed. Surface tension plays an important role in the formation of patterns. As such, this paper seeks to understand the changes in pattern morphology that should be observed in an electrochemical cell when changing the surface tension of the electrolyte solution by changing its viscosity. Surface tension and viscosity are known to be related, and as one changes the other should change as well. Ethylene glycol has been chosen for the purposes of this experiment. When added in a weight percent basis to the electrolyte solution, changes in morphology were indeed observed. Reduction in dendrite formation, and more defined patterns were found. Overall, it was observed that as ethylene glycol increased in weight concentration, viscosity increased, ion conductivity decreased, lower current outputs were observed, and dendrite formation reduced due to a decrease in mass convection.

93. *Modeling Cooper Pair Particle Interactions and Electron Scattering for Possible Dark Matter Detection Using Superconducting Transition-Edge Sensors*

Jose Pagan, Daniel Santavicca, and Chris Kelso, University of North Florida

This research project focuses on modeling and detecting the energy of broken cooper pair particles. This is done by using the idea of electron excitations in superconductors to detect ultra-light dark matter. With needing an absorber with very slow quasiparticle recombination time, we can use aluminum which is within the range of milli-seconds. Using a large superconducting absorber coupled to a superconducting transition-edge sensor (TES), we hope to read the deposited energy and develop a detailed theoretical model that will allow us to assess the effect of different device geometries and materials on the detector sensitivity. Using quasiparticle trapping, we use a thin film on the surface of the absorber with an energy gap smaller than the absorber. If electron excitations that diffuse into the trap and lose energy via electron-electron scattering and their energy reduced below the energy gap of the absorber, then these electrons will essentially become trapped within the film.