UNDERGRADUATE RESEARCH & ARTS COLLOQUIUM

Marshall Student Center • Thursday, April 6, 2017 • 9:00am – 8:30pm

OUR Passion, OUR Discoveries, OUR USF.
# Table of Contents

Welcome Message from the Office for Undergraduate Research (OUR) | 2
Message from USF President Judy Genshaft | 3
Message from Paul Dosal, Senior Vice President | 4
Message from Paul Sanberg, Senior Vice President | 5
Abstracts | 6
A Warm Welcome from the
Office for Undergraduate Research (OUR)
OUR Students, OUR Community, OUR Future

Welcome to the 2017 USF Undergraduate Research and Arts Colloquium. This event puts a spotlight on the incredible experiences available to all undergraduates at USF. In addition, it underscores the tangible benefits and outcomes for undergraduate students engaged in research including achieving higher grades, having a deeper understanding of their chosen discipline, and being more competitive for jobs, national awards, and admission to graduate and professional school.

More than 450 students presented the results of their research making this colloquium the largest institutional undergraduate research event in the state of Florida for a second consecutive year. Nearly 25% of the presenters are in their first or second year indicating they are highly engaged from the very beginning of their journey at USF. Today’s student presentations are diverse and feature a broad array of topics featuring disciplinary and interdisciplinary projects from the humanities, engineering, the physical and social sciences, mathematics and the arts. Taken together, these reflect USF’s strong commitment to student success.

As a globally-focused, community-engaged research university, USF is the ideal environment in which to foster the values of high-impact scholarship and creative activities. The success of this event is a result of the many individuals and entities within the USF community that have donated time, resources, and funding. We are delighted to again be affiliated with USF Week and we thank your staff for their partnership. Our sincere thanks to the Office for Research and Innovation for their continued support and for designating the UR Colloquium as a ResearchOne event. We express personal thanks to the more than 100 event facilitators, and over 40 student volunteers who so enthusiastically offered their valuable time and expertise to make this event a success. We also recognize the many USF deans and faculty members who assisted by distributing information and encouraging students to present at the colloquium. A special thanks to the University Communications and Marketing team for their outreach support and social media engagement. We are very grateful to the OUR faculty advisory committee for volunteering their time and expertise during the abstract review process. Finally, we would like to express our deep appreciation to USF faculty, postdoctoral scholars, and graduate students who inspire students through exceptional mentorship. This day would not be possible without all of you.

Congratulations to the 2017 Undergraduate Research and Arts Colloquium student presenters and research mentors. A special shout-out to the presenters graduating this semester as you begin your life’s work beyond USF. To all, we are proud of your success: you serve as model citizens prepared to excel in the global job market and to make meaningful and lasting contributions to society.

Sincerely,
Office for Undergraduate Research Team
A Message from USF
President Judy Genshaft

Dear Students,

Welcome to the 2017 Undergraduate Research and Arts Colloquium! Today, you are part of one of the University of South Florida's largest annual research events and taking your place in a special community of scholars, innovators and inventors. The Colloquium has become one of our university's great traditions, as well as an impressive showcase for the diverse talents and abilities of USF students.

Over the years, USF has created one of the nation's most significant undergraduate research programs and has made this multi-faceted learning opportunity a centerpiece of the USF undergraduate experience. One of the great advantages of attending a leading national research university is that students have the opportunity to create new knowledge through their own research. You are joining with your classmates in presenting ground-breaking scientific findings, performing new creative works of artistic expression, and bringing new insight into long-discussed topics. I hope this event not only leaves you excited about the work you've created, but empowered by the experience of sharing knowledge with others.

I am very grateful for your faculty mentors and instructors working through the Office for Undergraduate Research who have helped you carry out your projects and prepared you to present your findings at a very high level. Their skilled guidance will serve you well as you continue your academic career or enter the professional workforce. I know they are as proud of your work as I am.

Congratulations on your hard work and achievement! We celebrate your accomplishment with you!

Judy Genshaft
USF System President
A Message from

Paul Dosal
Vice President for Student Affairs and Student Success

Dear Colloquium participants and guests,

It is with great pleasure that I welcome you to the 17th Annual USF Undergraduate Research and Arts Colloquium, a highlight event of USF Week. The Undergraduate Research and Arts Colloquium has become the largest research colloquium in the state of Florida and its growth has coincided with the university’s increasing efforts on engaged learning experiences for students. As part of the university’s commitment to the strategic goal of student success, we have increased educational practices that positively impact students’ learning. As a high impact educational practice, undergraduate research offers students an opportunity to:

• develop a mentor/mentee relationship with a professor
• question and investigate what was learned in class
• explore connections with other academic disciplines
• build working relationships with other students
• discover new areas of interest
• develop written and oral communication skills.

The research that has been completed and prepared for this colloquium is another step in preparing participating students for their future. Added to their resume, these learning experiences will help students stand out and be more competitive when looking for a future job or applying to graduate school. The skills cultivated during this research experience will transfer into skills needed for the 21st century workplace.

I would like to thank the Office of Undergraduate Research (OUR), which is part of the Student Affairs & Student Success division, for their dedication and mentorship in providing this forum to showcase the impressive undergraduate research being done at USF.

Also, thank you to the faculty for sharing your expertise as world-class researchers and for expanding your role to serve as a mentor and guide to our undergraduate researchers. Finally, congratulations to the students for compiling such impressive work and sharing it with the USF community!

Paul Dosal, Ph.D.
Vice President, Student Affairs & Student Success
A Message from

Paul Sandberg

Senior Vice President for Research, Innovation, and Economic Development

Dear Participants:

Congratulations on being a part of this year’s Undergraduate Research and Arts Colloquium. The first Colloquium occurred in 2004, and is now its 14th year. According to the most recent data available, USF is #1 in Florida and in the top 10 in the U.S. for both number of submissions and number of presenters, when compared to AAU public universities. USF’s Research & Innovation and ResearchOne are proud to sponsor this event each year, and we thank Dr. William Cummings, Dr. Michael Cross, and the many faculty mentors who have guided you on your journey.

USF faculty and student researchers, scholars, and artists are generating new discoveries, thoughtful scholarship, artistic creations, and novel solutions to the challenges of our world. As an undergraduate student, you are a key partner in our university’s accomplishments. We are proud to celebrate your work today and throughout the year. The increasing importance of undergraduate research to student success is highlighted by the nearly 500 students presenting their research here today, and by the broad spectrum of disciplines represented from every college with undergraduate programs.

As an undergraduate student at the University of South Florida, you are part of a top research university, and are an important contributor to USF’s accomplishments. Working as an undergraduate researcher has been shown to increase a student’s self-confidence and independence. It prepares you to tackle new challenges and increases your ability to tolerate and overcome obstacles. In addition, it provides you the opportunity to learn about life as a scientist, gain valuable career experience, and sharpen important career skills such as critical-thinking, communicating, and presenting.

Our university’s success is the direct result of the commitment of our students, faculty, colleges, departments, institutes, centers, and community and business partners. Your dedication to research, scholarship, and creative endeavors makes you a critical part of this success. We delight in celebrating your research. Thank you, and again, congratulations.

Sincerely,

Paul R. Sanberg, Ph.D., D.Sc.
Senior Vice President for Research, Innovation & Economic Development
Distinguished University Professor
Abstracts

Title: Problems and Solutions with the Inclusion of Children with Mild Cognitive, Learning, and Behavioral Disabilities in Japanese Education
Name: Kaylee Abel
Mentor(s): Lindy Davidson
Program: Chemistry
Abstract: The challenge of including children with mild cognitive, learning, and behavioral disabilities is even more prevalent than those with more severe disabilities, as there are not many options for these children to attend special schools or institutions, and usually they are forced to be integrated within the regular school system. The purpose of this study was to answer the following questions: “What are the current problems facing the inclusion of children with mild cognitive, learning, and behavioral disabilities in the Japanese school system?” and “What are the potential solutions for these current problems?” This project examined published literature, including in-depth interviews that took place in Japan on this situation to gain insight from the educators’ perspectives. Articles on this topic were analyzed to provide answers to the questions posed. Finally, interviews were taken from individuals from Japan that had some experience in the educational system. Overall, problems discovered include the necessity of finding a balance between giving the children special services, while refraining from causing a stigma, the challenge of correctly identifying such mild disabilities, and allowing the children to be content as an individual and a member of society, something very important to the Japanese society. Potential solutions include integrating social time within the classroom for all students to interact and accept each other, allowing for the voices of the parents to be heard by conducting conferences where all the parents can attend, and to change to current policy that does not address inclusion.

Title: Impact on Student Learning
Name: Rachael Adler
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: There is a sudden absence in high-level vocabulary when entering a high school classroom. Students are not able to meet standards in comprehension because their vocabulary is not where it should be. It is even more difficult when students are looking at something that is not modern and requires different word choice than what would be used now. This study will be conducted in an 11th grade English 3 course as they read Lorraine Hansberry’s A Raisin in the Sun. A class of 26 students are experiencing a growth in vocabulary through multiple forms of vocabulary practice. They will partake in using context clues along with schema to find definitions, research a word and present it to their classmates, and they will write letters as a character from the play using the vocabulary words. The growth will be measured through a pre-test and followed up with a post test. This analysis occurred over the course of two weeks and results were yielded for the whole class. There will also be a comparison of two students in the class; one ELL girl from Puerto Rico and a boy with that has not met the standards for standardized testing. The results will show what knowledge students have now gained and constructed about these vocabulary words. Through the different activities there should be an overall growth of knowledge between the pre-test and post test results.
**Title:** A Narrative-Based Intervention for BRCA-positive Previvors  
**Name:** Mary Alao, Nivethitha Ketheeswaran, Rachel Koruo  
**Mentor(s):** Marleah Dean Kruzel  
**Program:** Public Health  

Abstract: Previvors are individuals who are highly predisposed to developing hereditary breast and ovarian cancer (HBOC) due to genetic mutations of the BRCA1/2 gene but who have not been diagnosed with cancer. While genetic testing for BRCA mutations provide patients with information regarding HBOC lifetime risk, merely receiving positive genetic test results does not enable previvors to make informed health decisions. Moreover, because previvors have not been diagnosed with cancer, they have specific health information needs, which are underreported and largely unidentified. Current studies highlight the importance of identifying BRCA previvors’ information needs, but fail to explore necessary solutions. Thus, this community-based participatory research project aimed to identify previvors’ information needs and develop an intervention tool that is responsive to their needs. The project was conducted in two phases: assessment of needs and intervention development. During the first phase, 25 female previvors were interviewed. Qualitative data analysis revealed a four-stage model of previvors’ information needs: pre-testing, post-testing, pre-decision, and post-decision. In the second phase, narrative messages were developed using previvors’ own language from the phase one interviews. Although it is not possible to identify all previtors’ individual needs, this study successfully identified overarching information needs among this population, which led to the development of a narrative-based intervention tool to increase knowledge and facilitate informed health decision-making. Future research should assess previvors’ information needs in a larger and more diverse population as well as test the narrative-based intervention.

**Title:** Adconoclasm  
**Name:** Laura Amador Gasca  
**Mentor(s):** Joo Woo  
**Program:** Studio Art  

Abstract: This research project focused on how the advertising industry contributes to the creation of new icons, or a modern “iconoclasm”, and how advertising impacts contemporary artistic practices. To explore this issue I walked the streets of Paris and captured photographs of ads around the city. I also conducted a literature review around the topic “modern iconoclasm”. The purpose of this research was to determine if the defacement of Parisian ads is more than vandalism; and to see if this political form of self-expression could also be seen as an interesting form of artistic expression. Through my art project, I aim to show (and understand) the discontent of society towards the tactics employed by advertisers to persuade us to buy a product, or to feel a certain way we shouldn’t feel. My art piece consists of a sculptural painting. I recreated a section of a Paris metro station, where most of these print ads were placed. Inside this frame I painted a portrait of someone that will help us feel related to, or even disassociated from her. The person in this portrait is nude, with no makeup or brands; the person appears to be authentic, raw, and vulnerable. On top of the painting I placed layers of ads, and I invite the audience to tear pieces of the ads away until the painting underneath is exposed. The intention is to reflect on what is inside, to reflect on who we really are and who we want to be as opposed to who we are told to be.
**Title: Neuronal Mislocalization of R298 Mutant DHHC9 Enzyme**  
**Name: Monic Amin**  
**Mentor(s): Robert Deschenes, Lisa Kirouac**  
**Program: Biomedical Sciences**  

Abstract: DHHC9 is part of the protein acyl transferase (PAT) enzyme family. Protein acyl transferases enzymatically add a fatty acid palmitate to cysteine residues to specific protein substrates. This modification targets protein localization to the membrane by increasing its hydrophobicity. This is a dynamic modification that determines protein localization and trafficking of proteins and can be reversed by the action of depalmitoylating thioesterases. Over 300 candidate palmitoylated proteins have been identified in rat cortical neurons, suggesting that this process plays a central role in the spatiotemporal distribution of proteins in the neuron. Neurons are polarized cells with discrete protein domains and DHHC9 as well as other protein acyl transferases facilitate proper trafficking of proteins to these domains. Recently, mutations in the zDHHC9 gene have been identified in individuals with X-Linked Intellectual Disability (XLID). A specific XLID-associated nonsense mutation, R298*, results in the expression of a C-terminal truncated protein. Here, we characterize the localization and trafficking of wild type (WT) DHHC9 and its mutant counterpart, R298* DHHC9 in neurons. To do so, we transfected GFP-tagged WT and mutant DHHC9 into primary rat hippocampal neurons and quantified the localization of the tagged DHHC9 proteins in the dendrites and axons compared to the cell body. We observed that in the WT-DHHC9 there is a significantly higher ratio of zDHHC9 in the axon and dendrites to the cell body compared to the R98* mutant.

---

**Title: A Comparison of Medieval Monastic and Modern Spanish Sign Language**  
**Name: Mary Aragona**  
**Mentor(s): Steven Surrency**  
**Program: Communication Sciences & Disorders**  

Abstract: In the 16th century, the Spanish monk Pedro Ponce De Leon created the first school for the deaf. To date, there does not appear to have been a study searching for a linguistic link between the signs of his monastic order and Spanish sign language. The current study searched for this link by comparing equivalent signs from the two systems, utilizing the criteria suggested by the article, "Factors to Consider When Making Lexical Comparisons of Sign Languages," (Sarah Ebling et al., in Sign Language Studies, Vol 16, Fall 2015). I found that 29% of the 70 comparable signs qualify as similar; therefore they do exhibit a degree of similarity. These results were also analyzed using a one-sample test of proportions, which found a 2.47% chance that these results came from two lexicons with a similarity above 40% (the criteria needed for two languages to be considered related). Thus, the linguistic similarities discovered are likely not a result of one of the systems being based on another, but rather could signify borrowed words between the lexicons, similar underlying images, or random coincidence. Future work should examine a greater number of possible cognates, or compare results to sign languages known to be unrelated. The current data demonstrates that certain Spanish signs could have plausibly been borrowed from the monks, though not with a high degree of certainty. More importantly, it indirectly strengthens the hypothesis that sign languages grow up largely in the Deaf community.
Title: "Mom, Dad, Let's Read Together!"
Name: Mary Aragona, Andres Crucet-Choi
Mentor(s): Howard Goldstein, Yagmur Seven
Program: Communication Sciences & Disorders
Abstract: Fathers and mothers have the potential to make unique contributions to their children's' language development (Cabrera et al, 2010; Gleason, 1975; Rowe, Coker, & Pan, 2004). Fathers’ contribution, unlike that of mothers, has rarely been investigated in low SES households. The “30 million word gap theory,” suggests that these children are severely underexposed to language (Hart & Risley, 2003). The current study aims to augment mothers’ and fathers’ decontextualized language contribution through shared storybook reading with embedded questions. The proposed research is significant because it aims to explore a means of developing early decontextualized language skills, which predict later reading ability. These skills include using cognitive verbs, defining words, and narration (Morgan & Goldstein, 2004). A multiple baseline single-subject design will be used, which allows the researchers to monitor changes to the target behavior after the treatment commences. The researchers will provide parents with books weekly for storytime, and instruct them to record readings alternately. Three types of decontextualized language strategies will be taught: explanatory, interpretive, and text to life. Once baselines are stabilized, parents will be trained to use the strategies in a staggered fashion (Morgan & Goldstein, 2004). The recordings will be analyzed to determine the frequency of dyadic interaction indicators and decontextualized language usages (Morgan & Goldstein, 2004). After implementation, both dyadic interactions and decontextualized language utterances are expected to increase. The results of the current study should be particularly pertinent to the development of gender-friendly interventions.

Title: The Effects of Bilingualism on Linguistic Relativity
Name: Mary Aragona
Mentor(s): Kyna Betancourt
Program: Communication Sciences & Disorders
Abstract: Linguistic relativity is the theory that the language spoken by a person affects cognition. Strong linguistic relativism, which quickly becomes linguistic determinism, has been rejected by most researchers. However, a weaker version of the theory, which states that language does not absolutely determine but merely guides cognition, is becoming popular among many linguists today. Additionally, the question of how bilingualism might affect linguistic relativity has also been receiving increasing interest. One interesting subtopic of these concerns is the area of event cognition, which deals with the way that a speaker of a certain language perceives or remembers an event. The systematic review being completed focuses on compiling current research concerning the interaction between event cognition and linguistic relativity, with a special emphasis upon event cognition among bilinguals, in order to develop a future line of research. To this end, a series of databases available through the USF library were searched to summarize the most recent findings in this area. Results demonstrate that many of the findings of linguistic relativity can be understood in light of implicitly using verbal memory to encode the results of certain cognitive tasks. In addition, there is a lack of a unified theory of conceptualization among bilingual linguistic relativity researchers. Research on these topics is capable of revealing the ways in which language affects the perception of reality. More concretely, it holds applications for
second language instructors, ways to bridge cultural gaps, and possibly insight for professions where an accurate understanding of eyewitness accounts is crucial.

**Title:** Helium Deficiency A Clear and Present Threat to Ongoing Research at USF  
**Name:** Juan Arguelles  
**Mentor(s):** Edwin Rivera, Arthur Maknenko  
**Program:** Chemistry  
**Abstract:** The availability of helium is quickly declining due to limited natural supply and the handover by the USA Federal government of both production and distribution to the private industry. Any attempts to introduce new sources of helium, have limited success because of the financial liability that comes from establishing an extraction and distribution system. Cryogen-based research requires a constant supply of affordable helium to maintain and continue innovate basic research in magnetic resonance, weather sciences, electronics and semi conductors, as well as, basic research in general. At USF current research in Chemistry and Physics make use of Helium at a rate of about ($35,000.00/yr. at current market price of c.a ~$10.00/lt). In 2008 we were impacted by the doubling of the price of helium almost overnight. Based on current helium reserves, it is anticipated that in the year 2021 the US Federal Helium reserve will completely shut down. Since this reserve provides 15-30% of the worlds demand, we anticipate volatility in the availability and price of liquid helium. The helium recovery project will address present and future concerns due to the fact that it would fund a procedure that would maintain a constant supply of helium via a 98% recovery rate. After the initial investment we expect the system to pay for itself within the first 10 years. By implementing said system we insure that the university’s scientific research will remain viable for years to come.

**Title:** Petrogenesis of Little Black Mountain and Gypsum Spring Volcanic Rocks, San Rafael Swell, Utah  
**Name:** Austin Arias  
**Mentor(s):** Aurelie Germa  
**Program:** Geology  
**Abstract:** We studied the Little Black Mountain (LBM) and Gypsum Spring (GSC) subvolcanic conduits of the San Rafael volcanic field to determine the relationships between the igneous bodies present and their respective magma origins. Petrographic, geochemical, and mineral investigations allowed us to better constrain the physical and geochemical relationships between the igneous bodies, i.e. dikes, sills and conduits, of the area. The petrographic examination revealed two rock types; shonkinite and syenite, the latter being the result of differentiation from fractional crystallization and immiscibility with the shonkinite. Both rock types contain olivine, pyroxene, plagioclase, and some hydrated minerals (amphibole and biotite), in different proportions. The geochemical and mineralogical analyses reveal that samples from LBM experienced greater differentiation than GSC samples through fractional crystallization. Feldspars analyzed in syenite samples are albite and sanidine, whereas shonkinite samples have broader plagioclase compositions. The presence of multiple sills at LBM, in contrast to none at GSC, explain higher degrees of differentiation observed for the LBM samples. Also, the calculated densities of the shonkinites and syenites are 2.6 and 2.5 kg/m3, respectively. The density contrast allowed the
syenitic melt to move upwards during the cooling and compaction of the shonkinite. Although LBM and GSC display a geochemical signature similar to ocean island basalts, meaning a mantle origin, rare earth and trace element compositions show an enrichment in LREE and large ion lithophile (LIL) elements compared to chondrite and the primitive mantle, probably related to relatively small degrees of partial melting of an enriched mantle.

**Title: Clear Speech**  
**Name:** Silvanna Astrada, Djuliet Cardosa, Gaberille Horn  
**Mentor(s):** Catherine Rogers  
**Program:** Speech Pathology

Abstract: As almost anyone who has learned a second language knows, understanding speech in a noisy party can be especially challenging, as unfamiliar sounds and words are distorted by overlapping voices. Previous research has shown that even early learners of English as a second language have more difficulty recognizing words in noisy conditions. Furthermore, additional research has suggested that non-native listeners are less able to benefit from speaking style changes that enhance communication in noisy conditions (clear speech). Those studies, however, have focused on perception of words and sentences. In order to better understand the role of speech sound perception alone in the difficulties described above, the present study compares native and non-native English-speaking listeners’ perception of words differing by only one vowel. Typical and clear-speech productions of the target syllables “bead, bid, bayed, bed, bad” and “bod,” were selected from three monolingual English speakers who had shown the ability use clear speech effectively in a previous study. The syllables were then mixed with noise to create six conditions, targeting a range of performance levels, from optimal to near chance. Both monolingual English-speaking listeners and learners of English as a second language were recruited as listeners. Listener performance will be compared across conditions in order to examine the effects of age of immersion in an English speaking environment on non-native listeners’ ability identify phonemes in noise and the degree to which these listeners can benefit from the phonetic enhancement provided by the communication style known as clear speech.

**Title: Analysis of Agency Adaptation to Changes in the Digital Landscape**  
**Name:** Katelyn Aykes  
**Mentor(s):** Scott Liu  
**Program:** Advertising/Finance

Abstract: When an advertiser or marketer is selecting what media would best suit client needs, they have a range of options including both traditional and digital media. Traditional media is typically known to consist of platforms including print, radio, television, outdoor, and other non-digital media, while digital media focuses more on desktop, mobile, and Internet based platforms. While traditional media platforms have existed for many years, most digital platforms have emerged within just the last two decades, meaning they are still relatively new. With the rise of social media platforms in the early 2000s many advertising agencies were forced to pursue and implement new forms of digital advertising to continue to reach their client’s target consumer. The switch from to traditional to digital media proved to be challenging to many agencies, and not all agencies were able to effectively adapt. While many social media and digital platforms have since grown and matured into more stable advertising platforms, the digital landscape continues to shift
and evolve almost every day. This can be observed through the growing popularity of platforms such as Snapchat, virtual reality, and augmented reality, all of which have emerged within the past ten years and still pose a challenge to advertisers trying to utilize them to effectively reach their target audience while gaining an appropriate return on investment. This research will attempt to uncover how agencies and marketers implement and adapt to changes in the digital media landscape, and discover the methods by which an agency or marketer determines success or failure when testing a new digital platform. The study will be applied to agencies and marketers operating within the state of Florida, specifically within large metropolitan areas including Tampa, Orlando, and Miami. Completion of the research found that agencies still show hesitation in adapting to new platforms due to the lack of research and inability to monetize on the side of the platform providers, while also showing that advertisers rely more on user habits in selection of advertising platforms than on social trends. Research also showed that traditional media is becoming more digitalized, proving that the trend in digital expands beyond social media and Internet platforms, ad will soon be integrated into all forms of advertising.

Title: Spatial Arrangement and its Effects on Participatory Behavior in Visual Thinking Strategies (VTS) as Mediated by Personality
Name: Anmol Babu, Benjamin Palenik
Mentor(s): Catherine Wilkins
Program: Psychology
Abstract: Visual Thinking Strategies (VTS) are a way to facilitate meaningful discussion about artwork utilizing evidence-based research to make sure the various aspects of VTS are all geared toward the positive growth of the participants. Some of these carefully coordinated aspects of VTS include word choice, paraphrasing guidelines, and body language. However, there is no specific protocol for seating arrangements; currently VTS sessions begin by seating the participants around a single piece of art, and the seating arrangement is chosen at random by the participants themselves. This study aims to explore whether there is an optimal seating arrangement for VTS participation, and will compare the default random seating to a circular seating arrangement. The hypothesis for this research study is that seating the VTS participants in a half-circle facing toward the painting and the facilitator would promote more participation among the participants than if the seating was random. By recording the number of responses of two different VTS groups going through both conditions, random and circular seating, the study will be able to find the seating arrangement that facilitates VTS participation. As a secondary objective, the study will see if personality, based on the Big Five personality traits, will mediate any effects exhibited in the data. The findings in our study might be significant in that it would be able to utilize evidence based research to improve the overall efficiency of the VTS method and extend any positive effects that may occur with VTS sessions.

Title: The Power of Yet
Name: Emily Baena
Mentor(s): Diane Porat
Program: Elementary Education
Abstract: The focus of my research is focused is on how to support elementary students’ development of a growth mindset. When I was in elementary school, I was always curious. I
needed to know why something was the best answer or how I could make something better. While studying abroad in Cambridge, I was taught this philosophy of always trying to do better and learn more is called a growth mindset. When one does not have a growth mindset, this is described as a fixed mindset, where you can only learn how much you were born with. When I walked into my second grade class, I was shocked that my students did not seem very motivated in regards to school. My students seemed to be happy even if every answer on the paper was wrong. My wondering developed into the research question: how can I help my students develop a growth mindset to improve in school? The students took a survey on mindset before and after the inquiry, so I can see how much their views changed. I read literature that explained to make learning tangible, provided effort rubrics, and encourage teacher talk to help students develop a growth mindset of their own. Through this research I hope to learn how to keep my students intriguingly motivated to learn.

Title: Enantiospecific Total Synthesis of Membranolide-A and Its Analogs to Allow Access to other Membranoids
Name: Alireza Bahadorkhan
Mentor(s): James Leahy
Program: Biomedical Sciences
Abstract: In the recent years, antibiotic resistance has become a growing issue in modern medicine. Rapidly evolving bacteria have adapted to an increasing number of the antibacterial agents that are available, forcing the scientific community to search for alternative drugs to treat bacterial infections. A natural product has been discovered that was isolated from the Antarctic sea sponge, Dendrilla membranosa. This natural product is a spongian diterpene secondary metabolite that has shown bioactivity against methicillin resistant strains of Staphylococcus aureus (MRSA), methicillin sensitive strains of S. aureus (MSSA) and Leishmania, a protozoa that causes parasitic infections. An enantiospecific total synthesis of membranolide will be performed that will allow access to a multitude of membranolide analogs. The bioactivity of the resulting analogs will be observed in a structure activity relationship (SAR) study and will elucidate the effectiveness of the analogs of the drug against the previously mentioned pathogens. The success of this experiment will allow access to oxyatamides that have yet to be evaluated, which will allow further studies into the analogs of this compound.

Title: Smashed: How Psittacosaurus Can Help Us Improve Digital Visualization Methods
Name: Alec Baines
Mentor(s): Jen Bright
Program: Integrative Animal Biology and Geology
Abstract: There is a low data set for studying extinct animals because fossilization only occurs under specific conditions and most of the fossils found are at least partially damaged. Recently, paleontology has begun using digital visualization methods, such as CAT scans and visualization software, to reconstruct damaged fossils. Current digital visualization methods are difficult to repeat, which makes research using them almost impossible to be accurately reviewed. The aim of this project is to improve repeatability via increasing the recording of digital visualization methods used to reconstruct a skull of the dinosaur Psittacosaurus that was previously considered too broken to provide useful information. Computed tomography scans (aka CAT scans) of the skull were
used to make a digital model of it. Digital visualization software, such as Avizo, was used to fix the skull’s damages on the digital model. Detailed records were taken of every alteration made on the model to fix these damages, so that it is more easily repeated. This project will tell us important information about this specimen, such as which species of Psittacosaurus it is, and how increasing the records taken of the digital visualization methods impacts the ability to repeat this procedure for future

Title: **Infographics: What Role do Infographics Play in Communicating Survey Results to the General Publics?**
Name: Kelsey Baker, Amy Benner, Christine Bocchino, Georgia Pevy
Mentor(s): Susan MacManus
Program: Mass Communications and Political Science
Abstract: With the advent of social media, the public receives information differently than they did five or ten years ago. Infographics are a more attractive technique used to display information. Our brains naturally seek out images or graphics that are more visual in nature. Nearly 65% of the population considers themselves to be visual learners. This project aims to investigate the role of infographics in the publication of survey results, as well as answer the following questions: Why are infographics used now? What kind of infographics are the most effective? Is this how survey results will be released going forward? The data that will be illustrated are from the University of South Florida-Nielsen 2016 Sunshine State Survey of 1,248 adult Floridians conducted September 1 to September 19, 2016; margin of error +/- 2.77 percent. (We were research assistants on the project.) Infographics provide a visually stimulating method to display and present data collected for particular issues. Once we are attracted to a particular image, we are more likely to pursue additional information and also retain the material. Infographics greatly assist individuals in processing data more efficiently and effectively.

Title: **Examining Preliminary Outcomes of mental health and substance use in Hillsborough Family Dependency Treatment Court (FDTC)**
Name: Brooke Bamford
Mentor(s): Kathleen Moore
Program: Psychology/Behavioral Healthcare
Abstract: The prevalence of parental substance use in substantiated child welfare cases indicates the growing need for a system that addresses both child maltreatment and parental substance use. Family Dependency Treatment Courts (FDTCs) are a type of dependency court to address parental substance use and child maltreatment. The main goal of FDTCs is to reunify the parent(s) and child(ren) and have the parent(s) remain drug-free. The current study examined 34 clients enrolled in the Hillsborough County FDTC during 2012-2015 on 6-month outcomes such as: drug use, mental health symptomatology, trauma symptoms, and reunification rate including permanent guardianship. Findings suggested significant reductions in drug use, mental health symptomatology, and trauma symptoms from baseline to 6-month follow-up. This study also found similar reunification rates from previous studies; 56% of our parents were reunified with their child(ren) and 6% of parents received permanent guardianship. Additional analyses suggested that when compared to non-reunified parents, reunified parents showed significantly more reductions in mental health and trauma symptomatology from baseline to follow-up. This research
study demonstrates potential benefits and positive parent outcomes for FDTC courts. Future research will compare this FDTC sample to a matched dependency court sample to examine reunification rates and time to permanency.

**Title: The Effects of Choreographic Repetition on Range of Motion and Strength in Dancer’s Hips**

**Name: Victoria Banner**  
**Mentor(s):** Merry Lynn Morris  
**Program:** Dance  

Abstract: Collegiate dancers, both modern and ballet, spend more time in rehearsals for choreography than in technique classes. Rehearsals, statistically, are also the time where most overuse injuries occur. However, even with this knowledge the analysis of choreography has been overlooked by researchers. Given the prevalence of injury, along with visual observation of unilateral repetition in many choreographic works, this study aims to examine dancers’ lower-limb use patterns in relation to repetitive rehearsal of a choreographic work. Further, the goal is to determine if hip muscular strength and flexibility measures changed over the course of the rehearsal process, and if so, how choreographic repetition may have contributed to the changes, perhaps indicating unilateral preferences. Ten undergraduate dance majors, between the ages of 18-25 volunteered for this study under an approved IRB. Dancers were recruited from the cast of a faculty member’s work. All participants were in the advanced levels of the dance program and had similar schedules, thus adding consistency to the study. Data derived from filming during the rehearsal process, weekly participant surveys, and manual muscle tests at the beginning and end of the rehearsal process. A physical therapist conducted the manual muscle tests, which included: Ober’s test, Thomas test, trunk rotation, straight leg raise, IR ROM and strength, ER ROM and strength, flexion ROM and strength, extension ROM and strength, abduction ROM and strength, and adduction lift test. There appeared to be a one-sided pattern for particular movements in the choreography (i.e jumps and turns). However, data analysis is still in process to determine the extent of the relationship between the choreography and strength/ROM differences. One pattern observed was a decrease, as much as a 40 degrees, in abduction ROM from beginning to end. In comparison, there was less notable change in other ROM tests. Based on the analysis thus far, it seems as though further studies will be necessary to determine the full extent of the effects of choreography repetition on the body. Due to other training variables it was impossible to isolate the influences specific to the choreographic work.

**Title: Use of the Golden Ratio as Choreographic Inspiration**

**Name: Ethan Barbee**  
**Mentor(s):** Bliss Kohlmyer  
**Program:** Dance  

Abstract: As a mathematical and natural phenomenon, the Golden Ratio has links with the Fibonacci sequence, the Stradivarius Violin, and the Vitruvian Man. The Golden Ratio has been widely used throughout the visual art, architecture, and music fields, by Mozart and Le Corbusier, among others, however it is rarely utilized within the field of dance. This thesis will serve as an inquiry into the numerous expressions of the Golden Ratio and how they can inform aspects of a choreographic solo. My methodology begins with in depth research of the mathematical, natural,
and artistic expressions of the Golden Ratio. I will, then, relate the three aforementioned expressions to different systems of choreography. These systems include those outlined in the Laban framework and the book, The Intimate Act of Choreography, by Lynne Anne Blom and L. Tarin Chaplin. These relations will result in the constraints and structures used as the skeleton for the dance piece. Finally, with these constraints in mind, I will create movement for the work. This research will engage in a dialogue between math and dance resulting in a 5-7 minute solo which will be performed in April. As of now, I have completed the research and relation steps of my methodology and have choreographed half of the solo. At the conclusion of the project, I hope to gain a fuller understanding of how disparate subjects, like mathematics and dance, can be woven together and how dance may serve as a way to communicate cross-disciplinary ideas.

**Title: Practical Application for Ecofeminist Theology**

**Name:** Theresa Barkasy  
**Mentor(s):** Dell deChant  
**Program:** Religious Studies  
**Abstract:** Previous ecofeminist theologians have presented lofty goals for changing society to be more environmentally friendly, however their literature has been ineffective in garnering change due to its lack of immediately applicable components. I posit that women’s generative issues provide accessible outlets for activism. In order to amass support for these ventures, however, Christian narratives must be retooled to redefine cultural norms surrounding women, womanhood, and mothering. Scholarship was compiled on both menstrual and procreative environmental impacts and solutions, and was then compared to biblical teachings about women to illustrate why these solutions remain culturally unpopular. By comparison a disparity was found between what an environmentally conscious life requires and what the Christian Bible teaches. The paper’s conclusions propose a remodeling of the aforementioned teachings in order to remove the stigmas from ecofriendly female practices.

**Title: I Am a Wizard (Wrocker): An Exploration of the Context and Practices of Wizard Rock As They Relate to the Tradition of the Theatre of the Absurd Movement**

**Name:** Alyssa Barrack  
**Mentor(s):** David Frankel  
**Program:** Theatre  
**Abstract:** The aim of this study is to explore the connections between the playing practices of Absurdist theatre (and its predecessors) and the Wizard Rock music/performance genre. This paper will also consider the similarities in conception of the two performance forms, as well as discover a broader social context for each form, and compare these. Research is conducted through careful examination of source material in both forms, as well as through other academic and journalistic work surrounding the genres individually. There is no academic work found relating the two, so research must be done separately and then analyzed to draw comparisons. The fundamental performance and social concepts of Theatre of the Absurd and the music genre Wizard Rock overlap significantly. This could lead to an expansion of either or both genres in the future, as well as a new way to view and teach Absurdism to budding academics and theatre practitioners alike. This connection may also help to bridge the gap between academic study and fan-based media, thereby legitimizing both important fields in the eyes of the other and integrating
cultural phenomena into academia for further research.

**Title:** International Implications on Women based on Prostitution Legalities  
**Name:** Kayla Bartel, Chris Griffin, Amanda Maliva, Kylie Pontious  
**Mentor(s):** Peter Funke  
**Program:** Honors College  
**Abstract:** We will be addressing the implications of prostitution on women under three conditions: in Cambodia where it is legal and unregulated, Germany where it is legal and regulated, and the United States where it is illegal altogether. We will also be looking at how the practice affects immigrant women who feel that it is their only choice in order to survive. The goal for this research project is to establish which condition is the most ideal and to determine what changes need to be made to better protect women from the dangers that are associated with prostitution. Our thesis is that the illegalization of prostitution does little to stem the flow of human trafficking and repercussions of infectious diseases. Research from credible sources online proves that prostitution where it is unregulated leads to increases in HIV passed from mother to child and prostitution where it is both legal and illegal encourages human trafficking if it is not regulated well enough. Immigrants with little education or literacy are prime targets for the industry and often feel compelled to participate. This study is especially relevant today because of the increasing rates of immigration occurring worldwide.

**Title:** Systematic Literature Review of the Relationship between an Active Lifestyle and Cognitive Decline  
**Name:** Devina Basdeo  
**Mentor(s):** Ross Andel. Nasreen Sadeq  
**Program:** Biomedical Sciences and Psychology  
**Abstract:** Exercise seems to have far reaching benefits for human health. Recent research indicates that exercise also relates to better cognitive outcomes including better memory and faster speed of information processing, both of which are crucial for normal cognitive functioning. The purpose of this project was to use a systematic literature review of PubMed and Google Scholar search engines to investigate the association between physical exercise and cognitive functioning in older adulthood. The results of this review point to several proposed pathways for this association, including better blood flow in the brain, greater release of the brain-derived neurotropic factor and endorphins into brain tissue, which helps the brain regenerate and stay healthy. With age, the hippocampus, which is crucial for learning and memory, shrinks by an average of 2% per year. Recent research also indicates that regular, relatively intense exercise not only prevents this decline but also can reverse it. Finally, recent meta-analyses of factors influencing the risk of cognitive aging indicate that exercisers show significantly better cognitive performance than non-exercisers. The difference can be expressed as of moderate magnitude with an effect size of 0.33. Coincidentally, a parallel published meta-analysis of the association of taking medication to improve cognition suggests that cognate drugs (e.g., Donepezil) improve cognitive function by the same degree, with an effect size of 0.33. In conclusion, it appears that exercise remains the best medicine for cognitive health with age.
Title: Impact on Foreign Language Student Learning  
Name: Melanie Bean  
Mentor(s): Laura Sabella  
Program: Foreign Language Education  
Abstract: As an educator, it is important to determine the impact on student learning. In a high school Spanish 3 Honors classroom, a common problem that occurs is the lack of student engagement or confusion. This is due to the students not paying attention in class, often because they feel they do not know the language well enough to understand. This study takes place in a final internship of a Foreign Language Education Major in an upper-class area of a Florida school district. A class of 28 students was taught travel vocabulary using images, translation, and collaborative activities, each of which is intended to increase student engagement and understanding. A pre-assessment was given using the definitions of the words and two days later, a post-assessment was administered. The results of each assessment were compared for the whole class and two students’ results specifically were examined, a boy with a 504 plan for extra time and a boy who does not require any additional time or accommodations. The results will show the impact these strategies had on student engagement and understanding. In particular, the results will show how these teaching methods affected the increase of the students’ vocabulary from the pre-assessment to the post-assessment.

Title: Isolation of Natural Products from an Antarctic Coral Species for Application to Drug Discovery  
Name: Dakota Becker-Greene  
Mentor(s): Bill Baker  
Program: Biomedical Sciences and Psychology  
Abstract: Drug over-usage produces resistance of infectious agents and the spread of diseases. The non-resistant strains have the potential to die off, leaving behind only the resistant mutants to thrive in a non-competitive environment. The original drug is progressively rendered ineffective, requiring development of a new drug to combat the same, now more resistant, strain of the disease or infection. Drug resistance is a global problem, and demands innovative solutions. Marine organisms from Antarctica have revealed potential new chemistry, which could be further developed into new drugs. Antarctic corals produce unique secondary metabolites that are a great source for novel drug discovery, since they possess a chemical defense system that compensates for their immobility. In extreme environments, like the Antarctic, coral species have molecular and physical adaptations to allow for optimal function in the cold waters. These adaptations persist throughout the reproduction process, compounding possible novel secondary metabolites in subsequent generations. This research focuses on the extraction, isolation, purification, and identification of compounds from an Antarctic marine coral, NBP13-37. The primary goal is to isolate novel bioactive compounds for drug discovery purposes. Coral samples collected during diving trips in Antarctica were freeze-dried, then processed through Soxhlet extraction, liquid-liquid partition, and multiple chromatographic techniques. The progression of these samples towards purity was guided by NMR spectroscopy. Upon elucidation, compound bioassays will be performed to assess bioactivity towards resistant infectious diseases, which could be a source of compounds for drug discovery.
Title: Superman: Contemporary Mythology  
Name: Robert Beckett  
Mentor(s): Michael Heyes  
Program: Religious Studies  
Abstract: Myth is important to the understanding of the world around us, so much so that we continue to create them and tell them to our children. In the ever-changing world of fiction, we see myth played out in numerous ways, none more fantastic or epic than the worlds created in comic books and the associated film and television media spinoffs. By examining aspects of comic book fiction this paper will explore how myths have evolved and are continuing to do so. Superman is representative of the American ideal. We will explore the myth of this character, from his initial origin as written by Siegel and Shuster, through it’s many evolutions in both comic book and film. Just as traditional myth has guided the societal norms, so too does the myth of Superman guide what Americans see as right or wrong. As with the myths of old, myths like this one show people the dominance of their way of life over others. Is Superman an illegal immigrant, or the child of someone foreign born on American soil? It depends on which version of his myth you look at. In exploring this character and the stories that have been written around his epic adventures, we can understand something of ourselves and what we want from the world. By understanding the growth of Superman, we will have a better sense of right and wrong and how it relates to the American people.

Title: Women Who Donate to PACs: Who Contributed to Ruth's List Florida and Why?  
Name: Amy Benner  
Mentor(s): Susan MacManus  
Program: Political Science  
Abstract: What motivates women who donate to Political Action Committees? This probative study is designed to study women who donate to political entities, specifically Political Action Committees (PACs). Little research has been conducted to understand women’s motivations and experiences when making political donations. Motivations for women who donate to Political Action Committees will be the same as women who donate to charities or non-profit organizations. Data for this study will be collected by completing a series of structured telephone interviews/mailed survey questionnaires of women who donated to Ruth’s List Florida (PAC) during the 2016 calendar year. I anticipate the results will show the majority of women donate to political entities for ideological reasons, versus access to candidates or material incentives. Women who choose to contribute to a PAC will do so because the PAC aligns itself ideologically with their set political values and beliefs. The type of women donating to PACs will be better educated, wealthy, older, and have previously donated to other political entities-individual candidates and political parties. Younger women will donate to individual candidates, whereas older women will donate to a variety of campaigns, including PACs. The research findings will supply valuable information to candidates, political parties, and specifically PACs as to how to effectively target women for political donations.

Title: Withaferin A Modulates α-synuclein Levels in Cellular Models of Parkinson’s Disease  
Name: Khawla Benyamine  
Mentor(s): Umesh Jinwal, Malathi Narayan
Program: Psychology
Abstract: Parkinson’s Disease (PD) is a progressive neurodegenerative disorder characterized by loss of neurons in the substantia nigra of the midbrain resulting in tremors, stiffness and slowing of movement. Though there are drugs to manage symptoms, there is no cure. The aberrant phosphorylation and aggregation of α-synuclein is implicated in familial and sporadic forms of PD. We hypothesized that withaferin A (WA), an anti-inflammatory molecule derived from the plant Withania somnifera, will decrease α-synuclein levels. This study investigated the effect of WA on α-synuclein and the pathways involved. We used M17 human neuroblastoma cells stably expressing either wildtype or mutant forms of α-synuclein. Cells were treated with 2 µM of WA for 24 hours and lysates were analyzed by Western blotting. Cells were treated with inhibitors of the autophagy and proteasomal pathways with or without WA. Intracellular localization of α-synuclein after WA treatment was analyzed by immunofluorescence. Our experiments show that WA treatment decreases α-synuclein levels in M17 cells expressing wildtype and mutant forms of the protein. Upon inhibition of the autophagy and proteasomal pathways, we found that WA induces a synergistic action of both of these pathways in order to decrease α-synuclein levels. We also found that these pathways compensate for each other. Treatment with WA may also induce nuclear translocation of α-synuclein. The effect of WA on modulating α-synuclein levels has previously not been investigated. Understanding the molecular mechanism of action of WA in decreasing α-synuclein levels may help identify other drug targets for PD.

Title: Defining the Food Scientist
Name: Andrea Bernat
Mentor(s): Sara Dykins-Callahan
Program: Honors Student
Abstract: Food scientists play a huge role in our society today. As the human population increases, the demand for quality food production increases. Surprisingly the average person does not know the science behind food, and many people do not know that food chemists exist. This research project sought to investigate the associations that exist between food science and the public, and worked to redefine the “food scientist” in society. To do this, historical and contemporary viewpoints were examined to explain the role that food scientists have played in the past and present. The perceptions of food scientists in the United States were analyzed using popular literature including peer-reviewed articles and published books. The worldwide focal issues surrounding food scientists were explained. Lastly, the roles and responsibilities of food scientists today were identified. Throughout this project, I was able to identify what it means to be a food scientist in our contemporary world. If it were not for food scientists, the world would have a much larger food supply issue and hunger problem than it currently has. Food scientists have used their understanding of food chemistry to create more weather resilient crops, to increase the nutritional value of the food we grow, and develop sustainable food supplies for an increasing population. From flavorings to packaging, food scientists contribute to our food supply and improve food production worldwide.

Title: Effects of Test agent-1 on Cognition, Tau Pathology and Inflammation in Tg4510r Mice
Name: Malika Berrada
Mentor(s): Aurelie Joly-Amado
Program: Chemical Engineering
Abstract: Alzheimer's Disease (AD) is a progressive disorder that deteriorates memory and cognitive function. Pathophysically, AD is characterized by inflammation and the formation of two abnormal structures in the brain, beta-amyloid plaques and tau tangles. The goal of this study was to test the effects of a diet containing a new drug, Test agent-1, in a mouse model that exhibits tau pathology. Tg4510r mice, which are genetically altered to exhibit tau pathology, either received a standard diet or were given a diet containing Test agent-1 for 3 months starting at 2 months of age. Non-transgenic littermates were used as a control. Before tissue collection, mice were submitted to a battery of behavioral tests to assess cognition. Sections from each mouse brain were analyzed for the presence of tau pathology and inflammation using immunohistochemistry. Tg4510r mice treated with Test agent-1 exhibited an improvement in memory when compared to Tg4510r mice fed a standard diet during radial arm water maze tests. The tau markers that were analyzed using immunohistochemistry did not show a significant decrease in tau pathology in the mice treated with Test agent-1 when compared to the mice treated with a standard diet. These results show that Test agent-1 may be a good candidate to improve cognition in a model of tau deposition. However, this improvement seems to be independent of an improvement in tau pathology. Analysis of inflammation markers is in progress and will allow us to know if Test agent-1 was able to decrease neuroinflammation in the brain.

Title: Role of Arts in Rehabilitation and Reintegration of Veterans
Name: Kendall Bett, Denise Bagarra, Tiara Smith
Mentor(s): Renee Hangartner
Program: Psychology
Abstract: This project will showcase the results from the evaluation of the 2017 Reintegration and Resilience Festival of Performing Arts. Three original performances including diverse types of creative arts occurred in conjunction with the National Initiative for Arts & Health in the Military convening in Tampa. The productions were about, by, and for veterans. Audience members at the performances included members of the community, art therapists, students, veterans and their families. This festival is the first part of a larger study that will systematically look at the feasibility and effectiveness of using creative arts with veteran populations. There is research to suggest that arts programming involving Theatre, Digital Storytelling, and Spoken Word for individuals with histories of trauma can be just as effective for processing as traditional evidence-based treatments. When using the arts, individuals can experience and/or express their thoughts and feelings without necessarily having to talk about or directly confront the trauma, if they are not ready (Americans for the Arts, 2012). No treatment is effective for all patients and examining the potential for creative arts as an additional option is needed. The portrayal of common themes in theater allow the audience to connect with the characters and provide a form of relief (Ali & Wolfert, 2016). Audience members completed anonymous post-show evaluations about their emotional reactions to the performances. Results suggest not only positive responses; but also, transformative ones. This research is being continued on a larger scale with the hopes of comparing creative arts programming directly to Cognitive Processing Therapy in veterans.
**Title: Effects of Alkalinity and Temperature on Methane Yield in High-Solids Anaerobic co-Digestion**  
**Name: Paula Bittencourt, Eduardo Jimenez**  
**Mentor(s): Sarina Ergas, Philip Dixon, Meng Wang**  
**Program: Mechanical Engineering**  
Abstract: Renewable energy options that incorporate waste management are becoming increasingly necessary in order to divert waste from landfills or incinerators. High-solids anaerobic digestion (HS-AD) can be used to produce biogas rich in methane (CH4) from the organic fraction of municipal solid waste (OFMSW), such as food waste (FW) and green waste (GW) (also known as yard waste). HS-AD’s reputation is growing in the U.S., since through combustion CH4 can be converted into heat and electricity. HS-AD can efficiently recover energy and nutrients from OFMSW with lower emissions while producing non-hazardous compost for use as a fertilizer. The goal of this research was to investigate the performance of co-digestion of GW and FW with biosolids at varying temperatures and with different alkalinity sources. For this experiment, biochemical methane potential reactors (BMPs) where used as the test method. The experimental design contained one set of BMPs at 35C, four sets at a 55C, and two sets of controls (one at each temperature). The sets contained the same ratios of GW, FW, and biosolids on a volatile solids (VS) basis, with different alkalinity sources. Anaerobically digested biosolids were used as an inoculum. It was found that the control with only inoculum at 35C produced the most CH4 and no significant changes were seen in BMPs with the different alkalinity sources. Further studies will be performed to improve the performance of the BMPs and reduce error in the setup of the experiment.

**Title: Parkinson’s Disease: The effects of peptidyl-prolyl isomerase enzymes on α-synuclein proteins**  
**Name: Roy Blackburn**  
**Mentor(s): John Koren, Laura Blair**  
**Program: Chemistry**  
Abstract: Parkinson’s disease (PD) is a neurodegenerative disorder that progresses by the aggregation of α-synuclein (α-syn) proteins found in presynaptic terminals of cells. PD is most commonly found in elderly patients with symptoms consisting of tremors, imbalance and slow body movements. The α-syn aggregates force a protective mechanism within the cell resulting in Lewy bodies, however the large amount of α-syn in the presynaptic terminals causes the degeneration through loss of dendritic spines. Peptidyl-prolyl isomerase (PPIase) enzymes function by cis/trans isomerizing proline bonds. Our previous work demonstrates PPIases have a positive effect on tau aggregation, which is found in Alzheimer’s disease. The purpose of this research is to express PPIases in cells overexpressing α-syn forming Lewy body-like aggregates. We will then analyze the effects of PPIases on α-syn stability and aggregation within the cells. Typically, α-synucleinopathies are found to have both soluble and insoluble forms. We hypothesize that the addition of PPIases will promote more soluble forms of α-syn. The PPIase treated cells will be assessed via Western blot analysis following solubility fractionation. We predict that these PPIases will alter α-syn similarly to the effects we have found with tau, ultimately decreasing the degenerative aggregates. The data provided by these experiments will help determine if PPIases can regulate α-syn pathology and will provide helpful information for further
experimentation in the study of PD.

**Title:** Stepped Care for Children after Trauma: A Case Study  
**Name:** Zoe Blair-Andrews  
**Mentor(s):** Alison Salloum  
**Program:** Psychology and Social Work

**Abstract:** Background: Children who have a loved one die may experience posttraumatic stress and experienced impairment. Treatment for bereaved young children is limited and interventions that address treatment barriers are needed. Step One of trauma-focused cognitive behavioral therapy was developed to address treatment barrier such as limited therapist training, parents wanting to solve the child’s problem, and cost. Aim: To conduct a case study to examine the degree in improvements in posttraumatic stress symptoms (PTSS) and impairment among a 5-year-old boy whose father died suddenly who participated in Step One. Method: The child and mother participated in Step One. Measures of PTSS and impairment where completed by the parent pre and post-treatment and during treatment. A measure of internalizing and externalizing problems were completed by the parent pre and post-treatment. An independent evaluator completed PTSS severity and treatment improvement measures. A 6-month assessment was conducted. Therapist time providing treatment was collected. Results: There was a decrease in PTSS (8-0), impairment (3-0), internalizing (26-7), and externalizing (23-11) from pre to post-treatment. PTSS and improvement improved over time during treatment. Improvements were maintained at the 6-month follow-up. The therapist spent 4.4 hours providing treatment. Conclusions: Step One for bereaved young children with PTSS may be a promising approach to help young children who have had a loved one die and to address treatment barriers. A randomized clinical trial on Step One with young children with PTSS is underway, and special attention to the outcome of bereaved young children will be examined.

**Title:** Evaluation of Treatment Outcomes and Long-Term Recovery for Veteran’s Treatment Court in Hillsborough County  
**Name:** Haley Bland  
**Mentor(s):** Kathleen Moore, Averi Fegadel  
**Program:** Behavioral Healthcare

**Abstract:** The Veteran’s Treatment Court (VTC) was established in 2015 in Hillsborough County to expand treatment resources available to veterans who are charged with misdemeanor and/or felony criminal offenses. The Substance Abuse and Mental Health Services Administration (SAMHSA) funded the grant, “Evaluation of the Hillsborough County Veteran’s Treatment Court,” in partnership with a local treatment agency and USF’s Florida Mental Health Institute (FMHI), who will provide client outcome and program evaluation. Does the integrated evidence-based treatment provided directly to veterans, coupled with trauma-informed care, produce better outcomes for recovery? The population of focus for this study is adults who have a primary substance abuse diagnosis and may suffer with a co-occurring mental health disorder. The study currently has six clients who have been accepted into VTC. The grant requires a total of forty participants per year for the next three years. Each client will be assessed and interviewed at baseline (prior to treatment) with follow-up interviews at six and twelve months, including questionnaires which measure substance use, mental health and trauma symptomatology, and
criminal justice recidivism. VTC focuses on a collaborative approach to treatment by requiring consistent court and case management, using evidence-based substance abuse and mental health treatment services, and providing a veteran peer mentor. Our goal is to enroll at least ten more clients over the next two months and we expect that the treatment participants receive will help in treating substance abuse and promote continuous recovery.

**Title: Teaching Trig in Community**  
**Name:** Claire Blazek  
**Mentor(s):** Laura Sabella  
**Program:** Math Education  
Abstract: Trigonometry is a topic and subject that will carry students through their advanced mathematics career. Thus, it is important that students engage with the material and learn it in such a way that they take ownership of the material. This study takes place in a high performing Algebra II honors classroom in a Tampa area high school. This school has students who come from the surrounding upper-middle class neighborhoods, as well as students who are bussed in from a more economically disadvantaged part of town. Because of this, there is often a clear divide between the students, and thus I want to use community as a teaching tool. For this unit I have planned partner talks, partner teaching, small group discussions and teachings, as well as whole group discussions, so that students have a chance to engage in the material as well as with their peers. The results of this study will show that having opportunities to work with peers and teach one another will lead to great increases in my students’ knowledge of trigonometry.

**Title: Characterization of HSP70-2 and HSP73**  
**Name:** John Blizzard  
**Mentor(s):** John Koren  
**Program:** Biomedical Sciences  
Abstract: Tau pathology is associated with numerous conditions including Alzheimer’s disease (AD), traumatic brain injuries (TBI), and Huntington’s disease, deemed tauopathies. Naturally understanding the factors which effect tau pathology is of utmost importance. Members of the heat shock protein (HSP) family have been shown to bind to hyperphosphorylated tau and regulate its aggregation and stability. Inhibition of specific Hsp70 family members ATPase activity has been shown to reduce tau in vitro. Two members of the HSP70 family, Hsp73 and Hsp70-2, are particularly promising targets for therapeutic strategies targeting tau pathology. However, there is no current method to discern the effects of selective inhibition between Hsp73 and Hsp70-2 in vitro due to their homology. The goal of this study is to identify compounds, if any, capable of discriminately inhibiting either Hsp73 or Hsp70-2. To achieve this goal, we developed an assay which can assess the individual ATPase activity of Hsp73 and Hsp70-2 using recombinant protein and the Malachite green ATPase assay. The measured ATPase activity for each protein in the presence and absence of small molecule ATPase inhibitors was compared for selectivity.

**Title: Physician Well Being**  
**Name:** Ifeoluwa Bolujo  
**Mentor(s):** Lindy Davidson
Program: Biomedical Sciences and Psychology
Abstract: Many physicians take a holistic view of patient health. An important part of healthcare for physicians is to lead by example and thrive in their own well-being, however this is a challenge for physicians in stressful work environments. How can physicians promote positive lifestyle habits in patients if they are not practicing a healthy lifestyle themselves? The wellbeing of physicians can affect an organization’s ability to provide the best and safest patient care and can lead to higher patient death, perhaps even malpractice. Taking care of patients is a time consuming and stressful job, so it is important to make sure that healthcare professionals are living healthy lifestyles. This honors thesis seeks to discover how physicians care for themselves in the midst of different stressors. This study was conducted using interviews and observations at various hospitals in the Tampa Bay area, including Lakeland Regional, Tampa General, and Florida Hospital. Physicians, medical residents, and medical students were interviewed about their personal health practices. Findings suggest that physicians have a hard time balancing their work and wellbeing, but also that they find different ways to cope with the stress. It is important to inform healthcare providers about personal wellbeing. It is also important to find ways to improve provider health.

Title: The Effects of a BK Channel Agonist of Tinnitus Induced by Acoustic Trauma in a Mouse Model
Name: Brianna Borsheim, Priya Chattopadhyay
Mentor(s): Joseph Walton, Andrea Lowe
Program: Biomedical Sciences/Chemistry
Abstract: Tinnitus—the perception of sound that has no external source—is an audiological and neurological condition that impacts an estimated 15% of adults. Currently, there are no effective pharmacological therapies for chronic tinnitus. However, it has been shown that large-conductance Ca2+ activated K+ channels (BK channels) play a significant role in the regulation of neuronal excitability, and are a promising target for the treatment of chronic tinnitus. The purpose of this study is to evaluate the effectiveness of BMS-191001, a BK channel agonist, on preventing or reducing tinnitus induced through acoustic trauma using a mice model. After acoustic trauma is induced, behavior testing, using the acoustic startle response, and electrophysiological testing, utilizing the auditory brainstem response (ABR), will be taken over a 12 week period to determine which mice show evidence of tinnitus. These tests gave information on both the perception of tinnitus, and the underlying neural changes that occur in various auditory brainstem nuclei. The mice that displayed behavioral and physiological evidence of tinnitus were be treated with BMS. The mice underwent further behavioral and ABR testing to determine if evidence of tinnitus had been suppressed or abolished. This study showed that the BK channel agonist caused significant changes in behavior, indicating that the opening of the BK channel may suppress the tinnitus percept. Furthermore, this study will serve as a building block for other types of therapeutics which show promise for preventing and/or treating tinnitus.

Title: Impact on Student Learning Analysis: Claim, Evidence, and Rhetorical Appeals
Name: Stephanie Branco
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: In seventh grade, students take tests such as the FSA that affect their future, yet students often lack engagement when being taught effective test-taking strategies and content. This study takes place in a middle-class neighborhood but with a population of low-income students. A class of fifteen seventh grade regular language arts students was taught about claim, evidence, and rhetorical appeals using multiple activities and teaching strategies in order to keep them engaged to increase their learning. Rather than following the course curriculum the way it’s written, the objectives and standards can be met in ways allowing students to move, work individually, in pairs, and in groups, and get to share their thoughts and opinions making the curriculum relevant to them. In order to retain the information, students have to practice these skills in multiple ways allowing them to learn through auditory, kinesthetic, and visual activities. A pre-test was given at the beginning of the unit measuring what they already knew about claim, evidence, and rhetorical appeals. A post-test was given a week later measuring that students can now identify these techniques in a paragraph as well as use these techniques in their own writing. Whole class results will be examined as well as the results of a low-performing male student and a high-performing female student of different backgrounds. The results of this study will show the impact on student learning and whether or not this approach to learning these writing techniques will engage students enough to increase their academic performance.

**Title:** Synthesis through Destruction  
**Name:** Jessica Brasseur  
**Mentor(s):** Ezra Johnson  
**Program:** BFA Drawing  
Abstract: This paper presents research that compares the Cubist art movement and the Beat literary movement of the early to mid-20th century. The project seeks to connect how each movement used collage as a means of responding to their respective political and social environments. The research also examines how the works of artists such as Pablo Picasso and Georges Braque, among others of the Cubist Movement, presented segmented anatomy, both human and object, and appropriated materials to present a concept and an image which expressed a rift in their milieu. Similar to Cubist collage the works of Beat writers such as William S. Burroughs and Brion Gysin also employed the spectrum of photomontage, both visually and literarily and lead to much scrutiny. By analysis through a historical context, this paper attempts to challenge such scrutiny of the artists.

**Title:** Disability in Indonesia: Social Movements and Policies  
**Name:** Elizabeth Bula  
**Mentor(s):** Lindy Davidson  
**Program:** Marketing  
Abstract: Indonesia is a country with a long history of abuse and lack of inclusion towards people with disabilities. In 2016, they recently enacted their new disability law, marking the beginning of what seems to be a change in attitude and rights for this minority group. However, the journey to get to this point has not been easy. The year before, social movements began to allow use of social media to connect people with disabilities in the country. Although Indonesia is a highly spiritual country, there are a lot of cases of abuses that include shackling, the practice of restraining someone with metal rings around their wrists or ankles, towards people with disabilities in overcrowded institutions for lack of adequate health care. This research project looks at how have
the recent social movements regarding disability, such as Kerjabilitas, which allows disabled people to be places in jobs, in Indonesia impacted policies on this topic and their implementation. In order to answer this question, I looked at the experiences and testimonies regarding the treatment and situation of disabled people in Indonesia, the recent social movements that have been taking place to obtain rights for the disabled and the laws that were in place and that have been enacted since and what they have achieved. In conclusion, I think it is important to understand the situations people with disabilities people face around the world and understand how social movements can affect and change the realities of this minority group and in what way.

**Title:** Student Perceptions of the Deaf Community at USF  
**Name:** Kayle Bunce  
**Mentor(s):** Steven Surrency, Yagmur Seven  
**Program:** Communication Sciences & Disorders  
**Abstract:** Our group research project will analysis how certain technologies have transformed the German economy and culture through time. To gain further understanding on the topic before our analysis, our introduction will provide basic figures on where Germany stands with its neighboring European countries in engineering prosperity and unique cultural identity. We will then present our research as a cross-sectional look at the developmental timelines of trains, energy production, and manufacturing techniques within Germany. Focusing on these three technologies, our findings will include their introduction into Germany, their community influences, records of advancements through time, and their present day applications. From this, connections and arguments will be drawn between Germany’s national advancements and the influences these technologies had in aiding or resulting in those advancements. Overall, our research project will track the network of timelines of specific technologies and relate them with cause-and-effect relationships to the cultural transformations and national advancements that lead Germany to become who they are today. From these connections, we will not only answer how we believe Germany in some ways advanced beyond their neighbors because of their developments in trains, energy production, and manufacturing techniques through time, but also answer how we should grow as a nation. We can reference how connecting factors in Germany's past use of technologies became the causes of specific effects witnessed today. With this, the United States can now take similar actions in developing or prioritizing certain technological uses to achieve the economic and cultural benefits desired for future generations.

**Title:** Disparities in Education for Chinese Children with Disabilities  
**Name:** Jasmine Burnett  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences  
**Abstract:** The project described in this presentation researches the lack of accessibility to education for children with disabilities in China. Potential contributing factors to the high uneducated rate amongst Chinese children with disabilities could include the high rates of abandonment, the high percentage living in poor, rural areas, and the denial of a free education until the mid-1980s. The purpose of this research involves dissecting the sociopolitical perspectives of the Chinese people and how they lead to legislation or lack thereof for children with disabilities. This research will answer the question of how policy contributes to such a high rate of uneducated disabled youth.
Research includes The Regular Classroom Movement and the advantages of classroom integration, a look into early interventions on a national scale by Early Childhood Care and Education (ECCE), and Chinese legislation passed involving compulsory special education. The literature has shown a push for children with disabilities in China to be integrated into schools since the mid-1980’s to 1990’s. It also shows a severe gap in accessibility and rates of abandonment and education of children with disabilities. This poster will exhibit the disparity of opportunity amongst children with disabilities and other children in China and the recent push in legislation regarding education and make suggestions regarding improving education rates.

**Title: Modifying Rifabutin to Decrease Rates of Antibiotic Resistance of Staphylococcus Aureus**

**Name: Tasha Butler**  
**Mentor(s):** Lindsey Shaw, Jessie Adams  
**Program:** Biomedical Sciences

Abstract: Staphylococcus aureus, a multi-drug resistant pathogen, is frequently responsible for nosocomial, life-threatening diseases such as: osteomyelitis, endocarditis, and infections at sites of prosthetic devices. This microorganism has become increasingly resistant, resulting in failed attempts at treatment. Multi-drug resistant pathogens, such as this one, are responsible for 700,000 lives lost per year. The World Health Organization (WHO) has estimated that by the year 2050, if this tragic issue is not confronted, this statistic will increase to an astounding 10 million. This microbe has become resistant to a vast array of antimicrobial therapies, such as rifabutin, which is a bactericidal treatment that works by inhibiting RNA polymerase. In order to combat this major human health crisis, we have worked with collaborators across the world to develop 23 analogs with minor and major stereochemical variances of the previously effective rifabutin. We have determined the MICs, MBCs, and mammalian cytotoxicity of these modified versions of rifabutin against S. aureus, and have discovered increased activity of these analogs against the deadly microbe in comparison to rifabutin alone. This increased activity indicates that these modifications of rifabutin could result in new treatment options to help prolong human lives.

**Title: Mental Illness Environmental Effects in Young Adults**

**Name: Brianna Butler**  
**Mentor(s):** Marie Bourgeois  
**Program:** Biomedical Sciences and Public Health

Abstract: In America, there are about 54 million people that are affected by some form of mental illness within a particular year. Mental illnesses are any disturbance within a human that affects behavior, personality, thought, and daily routine. Most studies of these illnesses focus on the different forms, side effects, and treatment. However, research strays away from the lifestyle preventions that can be taken. This brings about the question, how does one’s childhood lifestyle, learning behavior, punishment, and other important growing factors play a role in the development of specific mental illnesses? Ultimately, research on mental illness can develop measures that evaluate the childhood background of those affected in order to determine if environmental factors may be a factor. These data are then compared to those who do not have a form of mental illness, which is a case control study. A review of literature, will show the environmental exposures at a young age play a huge role in the development of a mental illness. This is important to note because
parents can develop ways to affect the identified factors that is more beneficial for the child. This could possibly prevent some forms of mental illnesses from developing at an early age in life. In the future, it could be linked to other forms outside of the environment such as technology and social media.

**Title:** Hunter’s Green Elementary School: A Pilot Program for Refugee Youth  
**Name:** Aisha Byrd, Cagara Bryan, Taylor Finken, Gillian Trujillo  
**Mentor(s):** Elizabeth Dunn, Hussien Abdulwafi  
**Program:** Public Health  
**Abstract:** According to the Florida Department of Child and Family Services (2016), Hillsborough County resettled 5,084 refugees, entrants and asylees in 2016. Of those resettled in Florida, 11.3% are under 18 years of age and many do not have a working knowledge of the English language which places them at risk of falling behind in their courses. The Hunter’s Green Elementary Refugee Youth Program aims to increase English competency among refugee and immigrant children as they become acclimated to their new community. University of South Florida (USF) faculty and students initially met with community partners and stakeholders at Hunter’s Green Elementary School to discuss establishing a pilot program aimed to support refugee youth and other English Language Learners (ELL). Volunteers meet with youth three days a week for 45 minute sessions. Children are divided into groups based on their skill level and they participate in activities designed to fit their needs. The pilot program has assisted 35 children in grades K-5th since September 2016. Parameters for transitioning out of the program were developed by creating benchmark criteria to test vocabulary, grammar, and reading comprehension. Five children have graduated from the program, serving as an indicator of its success. The youth program has addressed challenges administrators faced with the influx of newly arrived refugees by lessening the language barrier between educators and youth, and an understaffed team at the school. The development team plans to identify best practices, implement the youth program in other schools, and expand partnerships with USF.

**Title:** ISLA: Rhetorical Appeals  
**Name:** Angela Caban  
**Mentor(s):** Laura Sabella  
**Program:** English Education  
**Abstract:** Moving into Final internship in the College of Education is a daunting task. Students start the transition from student into teacher and must start to understand what impact they have on their students learning. This study takes place in the final internship of an Education Major in a 9th grade English I class in a lower-middle class neighborhood. A class of 19 students were taught about Rhetoric Appeals. To teach these students three different strategies were used to stimulate student learning and engagement. These strategies included video clips, graphic organizers and an alternative assessment for their end product. A pre-test of different examples of Rhetorical Appeal was administered asking students to match the different examples to the different synonyms for the Rhetorical Appeals. A few days later a post-test was administered with the same examples but this time the actual terms for the Rhetorical Appeals were used to match to the examples. Whole class results are examined from pre- to post-test, as well as the test results of
an ELL boy from Bulgaria and a girl with low test scores, are compared. The results will show the impact on student learning and whether these three different strategies encouraged students learning and engagement.

**Title:** Investigation ZnO/GaN and ZnO/AlN Solid Solutions for Photocatalytic Conversion of Carbon Dioxide under Visible Light  
**Name:** Johnnie Cairns  
**Mentor(s):** Venkat Bhethanabotla, John Kuhn  
**Program:** Chemical Engineering

Abstract: In the current energy and environmental scenario, reduction of CO2 deserves critical attention. Amongst the various routes of CO2 conversion, photocatalytic routes using solar irradiation (visible light) are very appealing due to their low operating temperature and potential to harvest abundant solar energy. Materials exhibiting success in photocatalytic reactions must possess appropriate band gap and band edges. Zinc oxynitrides, such as (ZnO)x(GaN)1−x, have recently received considerable attention due to their structural stability and tunable band gap. While it has been shown that (ZnO)x(GaN)1−x solid solutions perform great as photocatalysts in water-splitting and degradation of select organic molecules, there is a lack of reports on their use in the photoreduction of CO2. The goal of this work is to find the optimal chemical composition of (ZnO)x(GaN)1−x and (ZnO)x(AlN)1−x solid solutions for the photoreduction of CO2 under visible light. This problem has been approached via a combination of Density Functional Theory (DFT) calculations and experiments. In this study, the materials have been screened computationally to analyze the relationship between the band gap and chemical composition. It has been found that the band gap of both (ZnO)x(GaN)1−x and (ZnO)x(AlN)1−x decreases significantly with increasing ZnO content; specifically, for (ZnO)x(AlN)1−x with x = 0.5, 0.67, 0.75 band gap values of 4.19 eV, 3.34 eV, 2.93 eV, respectively, have been calculated. The materials have been synthesized from layered double hydroxides (LDH) and characterized, and they are currently being tested for their effectiveness in the photocatalytic conversion of CO2 in a lab built reactor.

**Title:** Learning and Memory are Altered in Wild Type Mice Following Inhibition of Circadian Protein, CK1δ  
**Name:** Christopher Cardona, Emily Peterson  
**Mentor(s):** Danielle Gulick, Heather Mahoney  
**Program:** Cell and Molecular Biology

Abstract: **Background:** Period 1 and period 2 (PER1/PER2) are nuclear proteins involved in circadian rhythms. Casein kinase 1δ (CK1δ) is an enzyme that phosphorylates PER2, which signals it for degradation. Inhibition of CK1δ shifts the phase of the circadian clock which could potentially alter cognitive function in the hippocampus, which is responsible for declarative and spatial memory. **Hypothesis:** The objective of the study was to characterize learning and memory in PER1/PER2 knockout mice versus wild type (WT) mice and see if learning and memory could be improved following pharmacological intervention. **Methods:** WT C57BL/67 and PER1/PER2 mutant mice were injected with CK1δ inhibitor (CK1δi), or vehicle, 20% β-cyclodextrin as a control. Spatial and associative learning and memory were tested with the Morris Water Maze (MWM) and Cued and Contextual Fear Conditioning (FC). Anxiety and locomotor performance
were assessed with Elevated Plus Maze (EPM), 24-hour probe heat maps from MWM, and the Forced Swim Test (FST). Western blotting was used to determine alterations in protein concentrations. **Results:** The expectation was that treatment of WT mice with CK1δi would improve learning and memory. WT mice treated with CK1δi showed an increased amount of time spent in the target quadrant for the MWM. Cued and contextual fear conditioning showed increased freezing time in WT mice treated with CK1δi. Western blotting revealed that there was a decrease in CK1δ.

**Title:** Miyople Choice Research  
**Name:** Jason Cento  
**Mentor(s):** Laura Sabella  
**Program:** Secondary English Education  
**Abstract:** Throughout grade school and into college students are required to take tests. Most commonly, regardless of subject area, these tests include a multiple choice section. Multiple choice questions can measure four levels of academic success. Being able to identify factual information, analyzing texts, inferring from texts, and application of devices. With the vast array of material able to be covered alongside the frequency of these tests this makes multiple choice knowledge and strategies invaluable to the everyday student. This study takes place in an AP English classroom setting where the class average on past multiple choice tests comes in around 50%. The majority of students in this school come from a middle to high middle class neighborhood. Students from two periods, consisting of about 35 students in total will be used as the basis. The goal of this project is to implement strategies which will allow students to be able to succeed when faced with any kind of multiple choice test. They will learn these through the process of annotation and group analysis first in class then on their own. First, a pre-test will be given followed by an in depth lesson and a post-test. In completing this study, the results will determine if an in depth analysis of multiple choice test taking strategies and deeper analysis of text will foster student success and improve performance. In concluding this research we will know whether or not this method works in improving testing efficiency and accuracy.

**Title:** Sleep as a Predictor of Cognitive Decline Using the CogState Brief Battery  
**Name:** Sanjay Chakkoli  
**Mentor(s):** Ross Andel  
**Program:** Biomedical Sciences  
**Abstract:** Sleep deprivation is a public health concern that has been linked with incidents of vehicular accidents, medical errors, and other errors. Lack of sleep may lead to increased risk of physical health problems as well as mental health problems. If a participant has low sleep quality, then they will show decreased performance on the CogState monthly assessments. The Pittsburgh Sleep Quality Index (PSQI) measures both subjective sleep quality as well as quantitative sleep parameters. The cognitive data used, known as CogState monthly assessments, measure reaction time, visual learning and memory, visual attention and vigilance, and attention and working memory. Both data sets will be analyzed to see if there is any correlation between poor sleep quality and performance on the participants’ monthly assessments, while controlling for confounding variables such as depressive symptomatology (measured by a score of 15 or more on the Geriatric Depression Scale) and medication associated with cognitive impairment. Results of
the data show a statistically significant correlation (p < 0.02) between Detection and PSQI total score. There was a statistically significant correlation between One Card Learning and PSQI total score (p < 0.02). There was a statistically significant correlation (p < 0.04) between hours of sleep and Detection. All showed a Pearson Correlation of -0.413, -0.426, and 0.375, respectively. By determining a correlation between lack of sleep and poor performance on the assessment, researchers will know to administer cognitive assessments when participants are well rested to prevent false positives for cognitive decline.

**Title:** Medical Scribes and Electronic Medical Records: Harmful or Helpful?

**Name:** Samantha Charter

**Mentor(s):** Lindy Davidson

**Program:** Cell & Molecular Biology

Abstract: The medical scribe industry is growing significantly on a global scale. The number of medical scribes has doubled each year, and there will be an estimated 100,000 scribes in the United States by 2020 (Slabodkin, 2014). There has been some research into the efficiency of medical scribes, offering the conclusion that they have a positive impact on patient care and the economy of medical centers. This senior honors thesis asks the following research questions: How can medical scribes function to help physicians in other ways than documentation while remaining an unlicensed position with minimal training time? How can medical scribes work to alleviate some of the biggest problems with electronic health records? Several types of medical professionals were interviewed, ranging from medical assistants to physicians, regarding their experience with medical scribes and EHR. Additionally, I personally have over one year of medical scribe experience working directly with EHR. The interviews have been analyzed for themes and compared to research done in the area already. Preliminary findings suggest that the productivity of the medical scribe position can certainly be improved and key areas of improvement in EHR systems have been identified. There is hope to be able to use this information to add to the current literature and to create a program outlining possible improvements to the position.

**Title:** Effects of the Presence of Adjacent Upland Forest Habitat on Body and Clutch Size of Supralittoral Crab Armases Cinereum

**Name:** Kiley Chernicky

**Mentor(s):** Susan Bell

**Program:** Environmental Biology

Abstract: Wetlands are some of the most valuable ecosystems, in terms of economic services and ecosystem production, in the world (Costanza et. al., 2006), but preservation of land outside of the intertidal zone is lacking, with little scientific knowledge regarding the exchanges between mangroves and their adjacent upland systems. Armases cinereum is a Grapsid crab selected for this study due to its highly mobile nature at the marsh/upland interface (Hubner et al. 2015), making it a very useful species when assessing the impacts of habitat connectivity. These crabs play especially significant roles as both detritivores and herbivores in their environments (Malley, 1978; Lee, 1998), and previous studies have shown that diet does directly affect size in these crabs (Buck et. al. 2003)(Hubner et. al. 2015). I investigated whether or not ecosystem heterogeneity had an impact on the reproductive characteristics of A. cinereum. Several gravid females were
collected over the course of one lunar cycle from two sites in Tampa Bay. Clutch size, egg diameter, carapace width, and sex ratios were measured for all crabs caught. Males and females caught at the mangrove site that lacked adjacent upland forest were significantly smaller, and therefore had smaller clutch sizes, than those caught at the undisturbed site. It may be important to note in future studies whether or not lack of adjacent upland forest habitat could affect A. cinereum size to such an extent that size of sexual maturity was rarely, if ever, reached by both males and females of the species.

**Title:** Capacity and the Fractional Quantum Hall Effect  
**Name:** Kade Cicchella  
**Mentor(s):** Razvan Teodorescu  
**Program:** Physics/Mathematics

Abstract: The Fractional Quantum Hall Effect is one of the most interesting topics of active research in condensed matter physics. The FQHE is observed in two dimensional electron systems with strong magnetic fields where the Coulomb interactions between the electrons cannot be neglected. The surprising result of FQHE is that the Hall conductance takes on fractional values of those in the better understood Integer Quantum Hall Effect. The microscopic explanation of this phenomenon is unknown. The Laughlin wave function proposed by Robert Laughlin in 1983 provides a variational approximation to the solution of the corresponding Hamiltonian. This project will show that the problem of finding the variational solution to the multiparticle Laughlin wave function can be approximated to the unit disk. The optimal wave function can be reimagined as finding the particle coordinates that minimize a potential containing a sum of logarithms of particle differences. This problem then becomes that of optimizing logarithmic capacity, and can be solved by recognizing certain transformation symmetries that the potential obeys. Reworking this problem in the language of capacities unlocks a whole new set of mathematical tools and the implications of this will be the focus of future research. The tools used in this work are theoretical and mathematical. It uses theoretical ideas to derive mathematical notions and then mathematical rules to unlock new theoretical ideas. This famous physical problem is lacking a solid theoretical foundation and thus this is the way in which the problem is approached.

**Title:** A Novel Method of Determining Lymphocyte Infiltration using Cancer Exome Files  
**Name:** Kendall Clark  
**Mentor(s):** George Blanck, Yaping N. Tu  
**Program:** International Studies

Abstract: Previous studies have found a correlation between high lymphocyte infiltration percentages in cancer specimens and a favorable outcome for the patient. Therefore, we were interested in developing an effective means of determining lymphocyte infiltration percentages using novel genomic technologies. In particular, DNA sequences are obtained from many cancer specimens, and most of the time these DNA sequences represent all of the exons in the human genome. These sequence files are termed exome files. Keeping in mind that the tumor specimen includes lymphocytes, the exome files will thus include B-Cell and T-Cell receptor recombinations. Using data from The Cancer Genome Atlas (TCGA) and The Cancer Digital Slide Archive, this study determined that the lymphocyte infiltration percentages in tumor biopsies from various cancer patients correlated with the detection of TCR Beta recombinations in the tumor
exome files. The VDJ recombinations are unique to lymphocytes, and as such the sequences associated with them can be identified in the exome file. For this study the exome files were obtained from TCGA, with each patient file being identified by a unique barcode. We also obtained the lymphocyte infiltration percentages of each barcode using the slide analysis from The Cancer Digital Slide Archive. Then, the statistical significance of the correlation between lymphocyte infiltration and the detection of the TCR Beta VDJ recombinations was determined. In the metastatic melanoma samples that were studied, there was a statistical significance between the lymphocyte infiltration percentages and TCR Beta VDJ recombinations, with a p value < 0.05. Future research will expand into analyzing the correlation between lymphocyte infiltration percentages and the TCR V(D)J recombinations from other cancer types, including breast and uterine.

**Title:** New Natural Products Isolated from Antarctic Coral Plumerella Delicatessima  
**Name:** Shane Clark  
**Mentor(s):** Bill Baker  
**Program:** Cell and Molecular Biology  
**Abstract:** Natural products are defined as any chemical compound or substance produced by a living organism. They are used all over the world as food, products in industry, and even as drugs in medicine. Natural products in the field of medicine are particularly interesting due to their ability to provide a self-renewing source of medication. Marine organisms continue to provide a robust source of new natural products. Sessile aquatic creatures are renowned producers of bioactive secondary metabolites for defense. A total of 812 new compounds were isolated from marine organisms in 2005 alone. One such marine organism, Plumerella delicatessima was isolated from the Plateau of Fascination off the cost of Antarctica. The organism was collected from depths ranging from 700-900 meters. After extraction, multiple purification steps including medium pressure liquid chromatography (MPLC) and high pressure liquid chromatography (HPLC) were employed to purify compounds. Nuclear magnetic resonance (NMR) and mass spectrometry (MS) were then utilized to elucidate metabolites and bioassays were used identify bioactive compounds. Seven novel diterpenes and one known compound, pukalide aldehyde, were isolated throughout this research. The compounds were all bioassayed and found were not found to be active against ESKAPE pathogens. The compounds themselves were all structurally similar to the heavily researched nuero-muscular toxin, lophotoxin which has a profound paralyzing effect through its irreversible binding to the acetyl-choline receptors in the brain and muscles. Further bioassay tests are underway.

**Title:** The Art of Natural Culture and Identity  
**Name:** Kristen Clayton  
**Mentor(s):** Allison Moore, Patrice Boyer  
**Program:** Art History  
**Abstract:** Through my study abroad experience in France, it became apparent that the basis of authentic French identity is the ability to transform the “natural” world into a visual atmosphere that transcends reality through an extensive knowledge of aesthetics. The French knowledge of aesthetics, the manipulation of nature, and ability to elevate the aesthetics of other cultures predominates the traditional Western understanding of culture through art while also revealing a
problematic fissure between the “natural” world and human constructions of society and culture. This realization led me to search for artistic inspiration and visual evidence of humanity and nature working in flow together, dismantling their dualistic relationship. The visual division of humans and nature prompted me to ask, “In what ways can a work of art embody issues of identity, nature, and culture through the lens of Japanese aesthetic philosophy?” due to Eastern perspectives presenting an idea of humanity working efficiently with the “natural” environment as demonstrated by Tanabe Shouchiku III’s woven bamboo exhibit at the Guimet Museum. Through creating works of clay, natural fibers, and photographic self-portraiture my research and artwork demonstrates that a reconnection with nature through art inspired by Japanese aesthetic philosophies can foster a shift in perspective and an understanding of one’s self within “natural” culture creating a global sense of a culture based on the human population’s interconnectedness with the “natural” environment.

Title: The Efficacy of Novel Plasmid Constructs in Promoting Ube3A Gene Expression and Protein Distribution in the Brain via rAAV-mediated Transfection
Name: Justin Coley
Mentor(s): Kevin Nash
Program: Biomedical Sciences and Psychology
Abstract: Angelman Syndrome (AS) is a hereditary disorder characterized by physical impairments and deficits in cognitive and motor function. AS has been linked to loss-of-function mutations in the maternally-inherited Ube3A gene, which encodes the ubiquitin ligase E6-AP. Improving levels of E6-AP in the brain of mouse models of AS has been shown to improve cognitive deficits associated with the disorder. Our group has shown that the use of recombinant adeno-associated virus (rAAV) vectors can be an effective method for gene delivery in mouse models of AS. This study examines the potential of uniquely designed novel plasmids containing the Ube3A gene possessing sequences for secretion of E6-AP followed by uptake in neurons. We have used various signal peptide and cell-penetrating peptide (CPP) sequences to compare the feasibility of these plasmid constructs in-vitro. Cells of the HEK293 cell line were transfected with these various plasmids to compare their efficacy for inducing secretion using Western blot. Following that the uptake of the secreted protein was monitored in HEK293 cells by Western blot. The results of this study will allow us to select the most effective plasmid construct that will demonstrate the uptake of E6-AP in these cells to further the gene delivery to the mouse brain by rAAV to ameliorate AS impairments. This project will ultimately contribute to the further understanding of AS pathology and suggest possible means to treat the syndrome in patients.

Title: Poverty and Disability in Bosnia and Herzegovina
Name: Nejra Colic
Mentor(s): Lindy Davidson
Program: Biomedical Sciences
Abstract: The Bosnian War that took place between 1992 and 1995 left the country in a detrimental state, with economic turmoil, and government corruption. Twenty-two years later, the situation has changed little. Bosnia has one of the world’s highest unemployment rates, at 57.5 percent, and more than half of the population lives in poverty or is at risk. In the midst of all this chaos, children with disabilities constitute one of the most vulnerable groups in the country. This research explores
the pressing role of poverty on the care and success of children with disabilities. This project uses record data, as well as interviews with families, to examine the hardships that children with disabilities face growing up in a poverty-stricken war-torn country.

Title: Promoting Peace through the Founding of a “Society for the Creation of Value”
Campus Club at USF
Name: Carmen Concepcion
Mentor(s): Lisa Piazza
Program: Behavioral Healthcare
Abstract: The Soka Gakkai International (“Society for the Creation of Value”) is an organization that upholds the humanistic philosophy of Nichiren Buddhism. SGI teaches that to turn our deepest obstacles into joy we must experience an individual human revolution. Members of SGI promote peace, culture, and education. In 2018, SGI aims to recruit 50,000 American youth to take a stand for the dignity of life. Although SGI frequently hosts information sessions on the USF campus in an effort to reach this goal, a Buddhism club does not currently exist at USF. My exploratory research documents the process of founding an SGI campus club at the University of South Florida. The research process involved internet research and open-ended interviews with current SGI administrators to determine the requirements and procedures for starting a SGI chapter at USF. I also gathered information from established SGI-USA campus clubs, which allowed me to refine my vision for the club. The data informed my process of starting a campus club, and helped me identify strategies for outreach and recruiting, and how to clearly communicate member benefits. A SGI-USF campus club can positively impact its individual members, but also the USF and Tampa community. Each student can transform the inevitable challenges of daily life into sources of growth and fulfillment and become a positive influence both on a local and global scale. Through the practice of Nichiren Buddhism, students of USF can unlock their inherent potential and contribute to their communities as empowered global citizens. This exploratory study represents Phase 1 of the research. Preliminary findings will inform the next phases of the process.

Title: Effects on Prepulse Inhibition by Peptide Modulator of BK Channel
Name: Laura Cortes
Mentor(s): Joseph Walton, Elliot Brecht
Program: Integrative Animal Biology
Abstract: Prepulse Inhibition (PPI) works as an operational method of measuring sensorimotor gating, a process which filters random sensory information from major stimulus in the environment. The acoustic startle response is inhibited when a weak pre-stimulus is given prior to startle stimulus, this is inhibitor is referred to as percent pre-pulse inhibition (%PPI). Studies have shown a relationship between impaired PPI and deficiency in the large conductance, voltage and calcium activated potassium channels (BK channels). Impairment of the BK channel has been associated with several neuropsychiatric disorders, such as schizophrenia, along with showing symptoms of impaired PPI abilities. While age does play a significant role in the deterioration of BK channels, it does not show the same result in that of PPI. The purpose of this study is to observe the effects of a peptide modulator on the BK channel and analyze those effects on PPI using a mouse model. Tone prepulse inhibition (Tone-PPI) and noise prepulse inhibition (NPPI) were both used to analyze the behavioral effects on the older mice. First the baseline PPI was determined using three runs of the tone-PPI, 8k and 32k, paradigms. Next, two weeks of...
behavioral tests, following a peptide injection 30 minutes prior to testing, were taken. It was hypothesized that the peptide would show significant results through obvious changes in PPI, hoping to see either serious increases or decreases in the %PPI. This study serves as a foundation for future modes of modulating the BK channel in efforts to find potential treatments or methods of management for a host of neuropsychological disorders.

Title: Innovations in Collagraph
Name: Taylor Crosland
Mentor(s): Ezra Johnson
Program: BFA printmaking
Abstract: This research project aims to discover a new method of creating Collagraph plates for printmaking. A Collagraph print is made by building up an image utilizing paper and glue to create varying depth within the physical plate. Then this is sealed, coated with ink and printed with approximately 10,000psi to create a final print. Opposed to traditional methods, this research will utilize a laser cutter as a tool in producing Collagraph plates. My project is to create a plate by layering different types of paper into one solid block with adhesive. Once flattened, this plate will then be placed into a laser engraver and the laser will cut shapes into the block. Once the design has completed cutting the labor of peeling away shapes begins and slowly an image is revealed. After the plate is fully peeled a sealant is applied to create a permanent bond so the block will endure printing. This plate is then wiped with ink and pressed into a damp piece of paper to transfer the ink from the plate to the paper. The results of this project were successful. The plate transferred an image perfectly to the paper with a unique aesthetic. This method will be pushed to greater extent to reveal a more detailed image with post process techniques. This technique is innovative and exciting as no other institution has produced this type of print before. Utilized correctly and this could lead to a new form of printmaking in academic environments.

Title: How the Method of Going Public Changes the Health of a Company
Name: Austin Cruz
Mentor(s): Jennifer Cainas
Program: Accounting
Abstract: Becoming publically traded is a goal of many companies. Raising large amounts of capital, becoming well known and being able to attract the best talent are just some of the reasons why companies go public. Most people are familiar with the traditional IPO process but there are other ways of going public than just an IPO. Companies can become public through different ways. The methods this research will analyze are IPOs, self-underwritten IPOs, reverse mergers and special purpose acquisition companies. Other research projects have looked at the general advantages and disadvantages to each method. The goal of this project is to analyze further than prior studies to determine if there is any significant difference between the methods a company goes public and the health of the company afterwards. This project will look at past research and other historical data in order to generate a conclusion. By comparing industry averages, financial ratios and expectations from professionals with specific case studies, a general conclusion can be made which method would be better for a company to use. The case studies used in this research are related to the food industry. These findings can be useful for companies who are seeking to go public.

Title: Novel Synthesis of Cannabinoids with Emphasis in Prospective Therapeutic Effects
Name: Emmanuel Cruz
Mentor(s): James Leahy
Program: Chemistry
Abstract: The human cannabinoid receptor one (CB1) is not fully understood in its connections to disease, particularly Alzheimer’s, cancer, and the infection of Naegleria Fowleri. To test the
Title: The Visual Brightness Behavior of Comet C/1995 O1 (Hale-Bopp) During 1995-1999  
Name: Anthony Curtis, Nathan Lastra  
Mentor(s): Maria Womack  
Program: Physics and Mathematics  
Abstract: Comets are the most pristine remnants of the formation of our planetary system and are valuable tracers of our solar system's chemical composition, structure, and dynamics. Comet C/1995 O1 (Hale-Bopp) was the subject of the largest ground-based observational campaign in history, and thus a prime target of analysis into the evolution of cometary gas and dust. In order to study the dust production behavior as the comet passed through the inner solar system, we compiled and analyzed its total visual coma brightness during 1995-1999 and created a secular lightcurve. The data include over 1,400 apparent visual magnitudes made via telescope, binocular, or naked-eye techniques from 16 observers that were published in the International Comet Quarterly. While previous studies presented lightcurves for Hale-Bopp, they did not adequately address the issues resulting from compiling data from a diverse group of observers, nor did they incorporate phase angle. The apparent visual magnitudes were corrected for geocentric distance and phase-angle, and additional corrections were made using statistical analysis techniques to account for consistent discrepancies among the observers that may have been caused by differences in instruments, apertures, or focal lengths used. Using the corrected lightcurve, we also derived $A_p \rho$ quantities over time, which are analogous to the comet’s dust production rates. We discuss the resulting secular lightcurve, $A_p$ values, and implications for gas and dust production in comet Hale-Bopp over four years.

Title: An Autoenthnography: A Perspective Shift on Normality and Disability  
Name: Camille Custodio  
Mentor(s): Joshua Barton  
Program: Psychology  
Abstract: This research project is a qualitative research that highlights an exploratory study showing a perspective shift in regards to the different narratives on exceptionalities. As a natural science major, my knowledge about exceptionality and normality is very limited compared to students with a social science or education background. For an exit requirement, I was able to sign up for the class Perspectives of Exceptionalities (EEX 4742), an education elective which discusses about the outlook on disabilities and differences. Students are asked to look into the social and political aspects of the topic. This research uses the method of an Auto-ethnography. The research details on the correlation of the class, the subject and myself. I am able to hold accounts and journal writings to see themes through my thought process. The goal of this study is to see the variables and factors that affected my view on the said topic. A common trend found in this research is the importance of education in understanding disability and normality.

Title: Pilot of the Effects of Surrounding Experiences and Realizing on Risk Taking  
Name: Lauren Davidson, Yaritza Carmona, Lindsay Everest, Vybhav Jagannath, Eric Sumpter  
Mentor(s): Sandra Schneider, Sandra Kauffman, Andrea Ranieri  
Program: Psychology & Economics  
Abstract: Two common financial transaction methods involve using physical currency or credit
cards. With cash, we directly experience our gains and losses, which is referred to as realizing those outcomes. With credit cards, we experience outcomes less directly, so these are sometimes called paper gains and losses. The purpose of this experiment is to examine how decision making is affected by realized versus paper outcomes. We focus on decisions involving risk, and we also examine how positive versus negative experiences may interact with transaction type to influence choice. We use a monetary gamble task to represent a hypothetical situation involving risky choices. One group of randomly assigned participants experiences mostly gains, whereas another group experiences mostly losses. Half of each group experiences only paper transactions immediately prior to a critical trial. The other half “cashes in” or realizes their earnings immediately before the critical trial. We then measure whether people select the more or less risky option on the critical trial, so that we can compare choices for those who have just realized their outcomes and those who have not. We expect to find that those with realized gains are more likely to choose the riskier option than those with paper gains. In contrast, those with realized losses are expected to be less likely to choose the riskier option than those with paper losses. The results of this experiment may help inform us about how different kinds of financial transaction can influence decision making, especially when doing well or poorly.

Title: Driving Forces in MD Simulations of Transition and 'Free' Flows
Name: Guy Dayhoff
Mentor(s): David Rogers
Program: Cell and Molecular Biology
Abstract: Simulations of porous gaseous flows are routinely used to investigate membrane permeation in catalytic adsorption and separation problems. Although basic continuum equations are supposed to breakdown in these nanoscale pores, many studies of force/flow relations assume flow to be linear in chemical potential or pressure differences. This work tests common assumptions using simulations of an atomistic, Lennard-Jones pore flow with distant, Langevin forcing at densities stretching through the transition and free flow regimes. Using NVE dynamics in very large boundary reservoirs, we find local equilibrium is established in the steady-state, but also identify two new finite-size effects. First, there is a steady flow of heat from the high-pressure reservoir backward to the thermostat region, and second, a significant proportion of the channel flow originates from the monolayer adsorbed to the flat outer wall. All walls are shown to obey a simple Langmuir adsorption isotherm at these low ($<400$ kPa) pressures, even in the presence of flow. Despite multi-layer formation on the inner pore walls as density increases, the current carried by atoms at the wall has the same proportion to current carried through the channel center under nearly all conditions tested (with constant pore diameter). Comparing our flow rates to Fickian and Knudsen linear relations shows that the difference in reservoir pressure is significantly more predictive than the difference in chemical potential for this size regime.

Title: Factors Associated With Students’ Attitudes Towards Behavioral Health
Name: Ardhys De Leon, Lauren O’Neil, Payton Brown, Julia DeMeyer
Mentor(s): Roger Boothroyd, Amber Gum
Program: Psychology
Abstract: One problem affecting individuals with behavioral health conditions is stigma. Previous research has identified that stigmatizing attitudes are more prevalent among males, older
adults, individuals with less knowledge about behavioral health conditions, and thus, lacking experience with behavioral health conditions. This study sought to identify factors associated with students’ attitudes toward behavioral health disorders. An anonymous online survey evaluated through a survey which was administered to students in the College of Behavioral Arts and Sciences (CBCS). The results are based on the 135 students who have responded to date. Data were analyzed using independent t-tests and chi-square analyses to determine the significance of the results. The findings indicate that females, Latinos, blacks and older respondents tended to have less stigmatizing attitudes towards behavioral health disorders. Additionally, respondents who knew someone with a behavioral health issue or had a behavioral health issue themselves had less stigmatizing attitudes and believed that individuals with behavioral health conditions can recover. Some of these finding are contrary to those reported in the literature. This may be due to the nature of the population that was surveyed; USF students enrolled in the CBCS, a college with most majors associated with the helping professions. Thus, although these results can be generalized to the students in CBCS, the results may not generalize to the entire USF student population, or to the general population as a whole.

Title: Pharmacological Vitamin C and Hyperbaric Oxygen Therapy as Pro-oxidative, Metabolic, Anti-cancer Therapies
Name: Janine DeBlasi
Mentor(s): Dominic D'Agostino, Angela Poff
Program: Cell and Molecular Biology
Abstract: High-dose ascorbic acid (AA) is an anti-carcinogenic, minimally toxic, metabolic therapy that targets tumor cell metabolism via an oxidative stress (OxS) mechanism. At pharmacological levels (achieved i.v.), AA reportedly delivers H2O2 to tumorous tissue upon oxidation, initiating cancer cell death, while sparing healthy cells. Hyperbaric oxygen therapy (HBOT) is another pro-oxidative therapy that delivers 100% oxygen at elevated pressure, increasing tissue pO2 and oxygenating hypoxic tumor cells, enhancing production of reactive oxygen and nitrogen species already elevated in cancer cells. This should augment OxS and induce cancer cell death, and suggests that HBOT would enhance AA-induced OxS. This study aimed to (1) examine the anticancer effects of AA in vitro, (2) evaluate the mechanism of AA-induced OxS, and (3) determine if HBOT and AA are additive or synergistic. To characterize the anticancer effects of AA in vitro, we measured cell viability and proliferation following treatment with AA in mouse brain tumor-derived VM-M3 cells. Concentrations > 0.5mM significantly induced cell death, while concentrations > 0.05mM inhibited cell proliferation. To investigate the role of OxS in AA-induced cytotoxicity, we measured cell viability in the presence of AA and antioxidant N-Acetylcysteine (NAC). Treatment with 0.5 and 5mM NAC attenuated AA-induced cytotoxicity. To determine if HBOT and AA are synergistic, we measured cell viability in their presence. HBOT significantly enhanced 0.3mM AA’s cytotoxicity. These findings indicate that AA exhibits anti-cancer effects in vitro through an OxS mechanism that can be enhanced by HBOT, supporting further investigation of these therapies as standard of care adjuvants.
Title: Germany in a Different Light: Evolution and Impact of Stained Glass in Gothic and Renaissance Germany
Name: Christina DeInnocentiis, Ashley Johnson, Will McClellan
Mentor(s): Peter Funke
Program: Biomedical Sciences
Abstract: A hallmark of traditional churches are the beautiful stained glass windows. These designs, which originally were used to illustrate Bible stories and have evolved into intricate works of art that capture more than just stories. This project focused on how stained glass has evolved through Germany’s technological advances and examined the culture expressed through the designs. This was accomplished through research into the different styles and colors of German stained glass in the Gothic and Renaissance periods. Part of the unique nature of stained glass as a medium is the way light strikes the glass, and the interaction of colors and the contrast of glass and solder. To demonstrate understanding of the colors and interactions of glass, a small, stylized replica of the Cologne Cathedral was created. This Roman-Catholic Cathedral, located in Cologne, Germany, was chosen to represent our research because of its traditional structure and iconic stained glass. The design was created using Adobe Firework and Adobe Photoshop, and was then used to cut and grind stained glass sheets of varying color, which were edged in copper foil and soldered. The completed structure’s solder was then tinted black to replicate the look of traditional pieces. The structure has a small LED light placed inside, adding luminescence. The intention of the piece is to draw views to it through the careful choice of colors and structure, to illustrate the particular power of light in art, and show why stained glass is so effective as a medium.

Title: Impact of Medical Marijuana Laws on Early-Life Health and Birth Outcomes
Name: Jonathan DiMuccio
Mentor(s): Olga Petrova
Program: Quantitative Economics
Abstract: Although possession and sale of marijuana for any purpose remain illegal at the U.S. federal level, as of January 2017, medical marijuana laws (MMLs) which liberalize the cultivation, possession, and use of cannabis for allowable medical purposes have been adopted by 28 states and the District of Columbia. With the expansion of state-level legislation allowing for medical marijuana use and the corresponding ongoing debate regarding drug policy, there has been a growing interest in investigating and quantifying both direct and indirect effects of the implementation of MMLs. Many recent studies have estimated the effects of MMLs on a variety of economic and public health outcomes including marijuana use among adults, alcohol consumption, tobacco use, hard drug use, prescription medication use, labor market outcomes, depression, body weight, health of older adults, and other measures and indicators. However, to date little is known about the effects of MMLs on early-life health. Using individual-level natality data from National Center for Health Statistics from 1990 to 2015 and taking advantage of the geographic and temporal variation in the implementation of MMLs, this paper aims at estimating the effects of state-level marijuana legislation on early-life health, particularly birth outcomes, such as birth weight, length of gestation, Apgar score, etc. in a difference-in-differences framework. Analysis of both direct and indirect effects of MMLs provides means to monitor the success of public policy in achieving its goals and targets. The impact of MMLs should be robustly evaluated to inform optimal policy strategy for the future.
Title: German Technology Through Time
Name: Daniel D'Oliveira, Veenah Francis, Andrew Lowe
Mentor(s): Peter Funke
Program: Mechanical Engineering

Abstract: Deafness is the inability to hear to such a degree that a person’s ability to respond to cues and to communicate verbally is impeded. The effects of Deafness can be minimized by the use of technology and oralism. Though Deafness is viewed as a culture by some, it has triggered a debate due to its historical perceptions as a physical impairment. The varying perceptions towards Deafness have implications on how professionals working with the Deaf and how they approach to their treatment, education, and role in the society. The purpose of this study is to investigate the perceptions of senior USF CSD students towards the Deaf community compared to the perspectives of senior USF Business students toward the Deaf community. The perceptions of USF students toward Deafness will be measured by “The Opinions about Deaf People Scale” developed by Berkay, P. (1994). For the survey, answers will be based on the semantic differential scale. The survey results will be evaluated by a Ttest. It is expected that the senior USF CSD students will have a positive attitude about the capabilities of the Deaf community compared to the senior USF Business students. This research is significant to understand how senior USF students majoring in CSD perceive Deafness in comparison to senior USF students majoring in Business. This understanding is particularly of interest to CSD faculty members and students as they may encounter Deaf clients.

Title: Evidence-Based Speech-Language Pathology Treatment for Individuals on the Autism Spectrum
Name: Melissa Donovan
Mentor(s): Kyna Betancourt
Program: Communication Sciences and Disorders

Abstract: As awareness of autism has increased in terms of recognizing, diagnosing, and treating the disorder, strides have been made in offering individuals the most up to date, evidence-based services and supports possible. Many times speech-language pathologists play a crucial role in the interdisciplinary healthcare team that works with people with autism. As health professionals and researchers work towards a better understanding of autism, it is imperative that individuals with autism, and their families, continue to demand treatment based on high quality evidence, clinical expertise, and services that they consider to be important and socially significant. The current study aimed to investigate current evidence-based treatment approaches for speech-language pathologists working with individuals with autism. The methodology for this project includes a literature review of relevant publications in the field and interviews with speech-language pathologists who have experience working with and treating individuals with autism spectrum disorder. Preliminary results suggest that evidence-based treatments can be successful for individuals with autism when care is taken to determine each person’s specific needs. The wide range of treatment options, support of scientific evidence, and availability of training resources to ease implementation makes evidence-based practice a viable option for all speech-
language pathologists to incorporate in their practice.

Title: Chordate Snapshot  
Name: Brian Douglas  
Mentor(s): Luanna Prevost, Christopher Osovitz  
Program: Environmental Biology  
Abstract: Taxonomy (the systematic classification of organisms) and phylogeny (the evolutionary diversification of organisms) are important but challenging biology concepts. One of the most difficult tasks for biology students is reading phylogenetic trees, diagrams which represent the relatedness and evolutionary history of organisms. The use of interactive study programs can benefit students both when learning and reviewing this information.  
To this end, I have created an interactive, web-based phylogenetic tree, titled Chordate Snapshot, which allows students to walk through the phylogeny of living chordates. This tree has a nested nature to it, meaning it shows how smaller clades (groups) fit into larger ones. This nested representation may help students avoid the common misinterpretation that more specific organisms evolved “from” more general groups, but instead students will be able to visualize that these specific groups are instead included inside broader ones. In the application, students are able to zoom their focus to any clade to see a concise description of that group, as well as an example picture, and a visualization of all its subdivisions. Chordate Snapshot will be published for open use by USF biology students and user opinions surveyed. I expect that students will find the application helpful for learning taxonomy/taxa. This program has the potential provide instructors which a new way to present information on taxonomy, as well as provide students with a new way to view evolutionary relationships. Future develop of the application post-launch may include quiz based study, or interactive games.

Title: OUR Colloquium Campaign  
Name: Vanessa Dreher, Elizabeth Jourdan, Emilia Kalogiannis, DeMarra Lee, Cassie Rankin  
Mentor(s): Lisa Piazza  
Program: Mass Communications  
Abstract: The University of South Florida Undergraduate Research and Arts Colloquium is an annual event hosted by the Office for Undergraduate Research (OUR). The OUR Colloquium gives students the opportunity to showcase their work to their peers, faculty, and the public and get critiqued by facilitators. OUR also provides students with the tools necessary to improve their professional skills. Prior to the Colloquium, students have the option of attending development workshops to guide them along the research process. The workshops cover creating abstracts and research posters and giving an oral presentation. OUR is devoted to enhancing students’ experience however, there was a need to bring awareness to the Colloquium and services OUR offers. We developed a marketing campaign to increase awareness and attendance of the colloquium through increasing social media presence, heightening on-campus outreach, and implementing digital media marketing strategies. After analyzing the marketing efforts of previous years, we conducted a SWOT analysis to determine how to increase the impact of the 2017 colloquium. We created a marketing campaign with the theme, "OUR Passion, OUR Discoveries, OUR USF." The campaign increased social media presence, blog posts, video promotion, and
utilized unified graphic design which made our campaign unified and appealing. Because of these efforts we are expecting a large student turnout and an increase of engagement through social media. For future research, we will analyze the results of the day of the event, gather footage, note the successes and failures, and pass this information onto the next marketing team.

**Title:** Potential Answer to Amoebic Infections: Isolation of Secondary Metabolites from Mangrove Fungal Endophytes  
**Name:** Victoria Dukharan, Victoria Mischley  
**Mentor(s):** Santana Thomas  
**Program:** Biomedical Sciences  
**Abstract:** The purpose of this project is to isolate secondary metabolites that are active against Naegleria fowleri and Acanthamoeba. Secondary metabolites are chemical defenses that are used by certain organisms. Although secondary metabolites are not necessary for survival, they are used as a means of defense against prey and pathogens. The secondary metabolites are produced by microorganisms that live in symbiosis with the organism. Specifically, in plants, fungal endophytes can produce secondary metabolites. In this project, mangrove plants are collected and the fungal endophytes are isolated. Once the fungal endophytes are isolated, the fungal endophytes are introduced to epigenetic modifiers that increase the potential of the secondary metabolites being produced in the lab. These fungal endophytes can potentially have secondary metabolites that can defend against other types of microbes such as bacteria, other fungi and amoebas. Once the secondary metabolite has been extracted, it is screened through bioassay against Naegleria fowleri and Acanthamoeba. These amebic infections are currently incurable. We have identified some crude extracts that show activity against N. fowleri and Acanthamoeba which, by bioassay guided fractionation, we will isolate to discover pure bioactive compounds.

**Title:** Social Commentary in Njal's Saga: Law in the Presence of Feud  
**Name:** Steven Dunn  
**Mentor(s):** Jennifer Knight  
**Program:** History  
**Abstract:** In medieval Icelandic society, law was deeply intertwined with everyday life; it was the Icelanders’ greatest obsession. Yet, one could argue that this obsession only bloomed in the face of an opposition: the presence of feud. In a medieval tale called Njal’s Saga, an Icelander voiced his concerns for a land consumed by feud, indicating that Iceland’s independence perished due to legal manipulations made in the pursuit of personal honor. This study argues that a careful examination of instances in which feuds reach formal litigation in the saga reveals a pattern of social commentary, even suggesting that this saga was specifically designed to comment on the negative role of the ever-powerful desire for personal honor. In the case of Njal’s best friend, Gunnar, the author reveals the true fate of an Icelander in this world of honor. Swept into the chaotic fury of honor and blood, Gunnar struggles to remain true to the law and its judgments, eventually being consumed by feud as legal decisions are continuously ignored. Using the characters of this saga, the author demonstrates to his audience the reason why his society met its cold fate. This author never intended his voice to be stagnant, lost in this fog of historical dissection; he actively strove to amend his society, while simultaneously hoping to inspire a better future. This study, then, illustrates the active role that this saga and its author once occupied within
society, and suggests that similar approaches ought to be taken in future scholarship.

**Title: A Preliminary Study of CHCHD10 mutations associated with ALS using C. elegans as a Model**  
**Name:** Medina Dzaferi, Tamara Mangal, Yue Zhang  
**Mentor(s):** David Kang  
**Program:** Biomedical Sciences and Anthropology  
**Abstract:** Frontotemporal dementia (FTD) shares similarities with Amyotrophic Lateral Sclerosis (ALS) on a genetic level. There are several gene mutations that link FTD to ALS. The major pathological link between FTD and ALS is associated with TDP-43 accumulation, a neurotoxic protein which contributes to mitochondrial dysfunction. The CHCHD10 gene encodes a protein located in the mitochondria at the cristae junction of the intermembrane space. Recent human genetic studies have identified multiple CHCHD10 mutations in sporadic and familial FTD-ALS spectrum disorders. Studies suggested that the mutations in CHCHD10 reduce mitochondrial length and induce disorganization of mitochondrial cristae morphology. However, the nature of the mutation and its pathology are unknown. The purpose of this study was to determine if har-1 mutant C. elegans, a human CHCHD10 ortholog, could be used as a model to study ALS. It was hypothesized that it would be a suitable model because the DNA sequences of the human CHCHD10 gene and the har-1 gene in C. elegans are 41% identical. This was done by comparing the oxidative stress by mitosox staining, body lengths per second (BLPS) and curling of har-1 mutant (DA2155) and har-1 knockout (VC3169) worms to that of an established C. elegans model for ALS that expresses neurotoxic TDP-43 (CL6049). DA2155 and VC3169 showed movement impairments and an increase in oxidative stress similar to CL6049 worms. This included an increase in curling and mitosox staining and a decrease in BLPS in all three worm strains which support the hypothesis.

**Title: Disability and Haitian Discrimination in the Dominican Republic**  
**Name:** Ashley Elliott  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences  
**Abstract:** There is currently a lack of research being done on the subject of disability, especially concerning disability in non-western countries. This poster presentation will explore how disability is viewed in the People's Republic of China. The focus of my research will be on the inclusion and or exclusion of children with disabilities in the Chinese education system. Research on this topic will be carried out through the use of journals, books, publications from government agencies as well as from NGOs. Preliminary findings have indicated that there is partial inclusion of children with disabilities into the education system however, exclusion is more prominent. This research is significant because it will bring into the light the needs of people with disabilities across the globe. It will highlight the good that is being done to uphold the rights of people with disabilities, as well as, improvements that can be made not only abroad but at home as well. Finally, this research will bring the topic of disability forward and help pave the way for more investigation to be done on the subject.
**Title: Investigation into the Regulation of Histone Dynamics During the DNA Damage Response**  
**Name:** Sylvia Emly  
**Mentor(s):** Younghoon Kee  
**Program:** Cell and Molecular Biology  
**Abstract:** The DNA damage response (DDR) is a system of vital cellular response pathways that maintain genome integrity. Dysfunction in DDR pathways is associated with many disorders including cancer, spinocerebellar atrophy, Alzheimer’s and Parkinson’s disease. Understanding the molecular mechanisms that underlie DDR will not only benefit our understanding of disease pathogenesis, but ultimately aid in designing better diagnostic tools and more effective, individualized therapeutic strategies. DNA is stored as chromatin, densely packed DNA wrapped around a core of eight histone proteins. When damage occurs, numerous intracellular pathways work to reorganize the nucleosome, the unit of DNA and histones, to allow repair proteins access to the damaged site. It has been suggested that rapid reorganization and restoration of nucleosome structures is essential for repairing damaged DNA and maintaining genome integrity. Our recent work unveiled a novel mechanism involving the histone chaperone complex FACT (a heterodimer comprised of two proteins – SPT16 and SSRP1) and its physical interaction with the protein ubiquitinating enzyme UBR5. We found that UBR5 antagonizes SPT16 at sites of UV damage. Here we aim to further characterize the dynamic nature of FACT and nucleosome reorganization at damaged chromatin. Using live-cell imaging coupled with fluorescence recovery after photobleaching (FRAP) and SNAP tagging we will demonstrate that histone H2A is reorganized following UV damage, and that this process is dependent on UBR5. This system for monitoring nucleosome dynamics will be used in future studies to examine precise rate of histone turnover following multiple types of genotoxic stress.

**Title: Unavoidable Connections: A Look at the Amputations and Connections of the Refugee Crisis Through Art**  
**Name:** Taylor Emmons  
**Mentor(s):** Esra Akin-Kivanç  
**Program:** Art History  
**Abstract:** According to United Nations estimations, 4,798,574 refugees are directly affected by the violence in Syria. Responding to the ongoing crisis, the exhibition “I Am With Them” débuted at the Institute of the Arab World in Paris in the summer of 2016. The exhibition, created by photographer and filmmaker Anne A-R, aimed to give a first-hand account of the Syrian tragedy through larger than life-size photographs and video installations that she places strategically so as to envelop the viewer within the space. A-R confronts her visitors with unanticipated immediacy, and brings to the fore one of the world’s most urgent humanitarian crises. The project endeavored to ignite a public sense of urgency among exhibition viewers, and to challenge viewers to confront the “refugees” as individuals. My research examines A-R’s project through the theories of the Marshal McLuhan, who warned of the dangers of technologies in the digital age, and their ability to remove all sense of responsibility. Through an analysis of A-R’s exhibition, my research illustrates McLuhan’s arguments, and demonstrates how, when used with due diligence, technology can serve the interests of art, rather than impeding it. I argue that A-R’s effective manipulation of her images and the exhibition space activate the viewer’s consciousness and
Name: Taylor Emmons
Mentor(s): Esra Akin-Kivanç
Program: Art History
Abstract: Portraiture was a popular genre found in royal albums created at the Mughal court in the seventeenth century. One portrait in particular, Nur Jahan, holding a portrait of Emperor Jahangir, attributed to Bishandas, stands out with its illustration of a single full-length female figure holding a portrait of her husband and emperor, Jahangir (r. 1605-1627). Despite the existence of extensive literature on Mughal portraiture in general, and on the life of Nur Jahan in particular, the implications of this compelling image (a portrait holding a portrait, an “embedded image”) in relation to Nur Jahan’s powerful role at the Mughal court has been overlooked. This paper shifts the emphasis to a discussion of the culturally distinct symbolism of reflective images, religious signs, and the impact of European artistic traditions embedded in this image. Through a novel analysis of Nur Jahan’s political, cultural, and social engagements and aspirations, I argue that the driving forces behind the creation of this portrait were her desire to claim and legitimize authority to fill the political vacuum following the death of Jahangir. Informed by theories of translation, this paper poses three main questions; “What are the visual tools that the artist adopted in order to serve Nur Jahan’s political agenda?”; “Into which artistic traditions and political contexts did the artist try to integrate Nur Jahan’s portrait?”; and lastly, “In what ways did Bishandas translate the embedded images popular at the court of Jahangir into the portrait of a female royalty challenging social norms and traditions?”

Title: Impact of Using Diverse Media In A Single-Gender Classroom
Name: Joshua Evans
Mentor(s): Laura Sabella
Program: Mathematics Education
Abstract One of the age-old challenges faced by teachers has been the issue of keeping the focus of students in class. It can be a real challenge for interns and first-year teachers. Additionally, this can become especially challenging when the class is a middle school classroom full of nothing but boys. In this situation, the teacher has to learn the balance of keeping the content in pace while keeping the classroom focused and paying attention. This study takes place in the final internship of a Mathematics Education Major at Franklin Boys Preparatory Academy, in a 7th grade math classroom with 23 7th grade boys. The boys were taught basic laws of exponents using a variety of media, ranging from online games, to paper quizzes and powerpoint presentations. A pre-test of exponential laws was administered, and a post-test highlighting the laws was administered 3 days later, at the end of the week. The results of the whole class are examined as a whole, and in addition, two boys are covered in more detail, from two very different points of SES, and from two different cultural backgrounds. The results will show the effectiveness of using diverse media to retain the focus of young boys, while still delivering relative and important information to guide
student learning. The results will especially highlight the impact of using diverse forms of media to present and facilitate learning of exponents to a class of 7th grade boys, demonstrated by the performance of the boys on the post exam.

**Title:** Modeling Molecular Hydrogen Emission in M Dwarf Exoplanetary Systems  
**Name:** William Evonosky  
**Mentor(s):** Kevin France  
**Program:** Physics  
Abstract: Exoplanets orbiting low-mass stars are prime candidates for atmospheric characterization due to their astronomical abundance and short orbital periods. These planets orbit stars that are often more active than main sequence solar-type stars. They are exposed to differing levels of ultraviolet radiation which can cause traditional “biosignature” gases to be generated abiotically, potentially causing false-positive identifications of life. We modeled the recently discovered molecular hydrogen emission in the ultraviolet spectra (1350 – 1650 Å) as arising from the stellar surface, excited by radiation generated in the upper chromosphere. The model was compared with observed hydrogen emission from the “Measurements of the Ultraviolet Spectral Characteristics of Low-mass Exoplanet host Stars” (MUSCLES) survey by conducting a grid search and implementing a chi-squared minimization routine. We considered only progressions from the [1, 4] and [1, 7] first excited electronic levels. Our modeling procedure varied the atomic hydrogen column density (in the chromosphere) as well as the photospheric molecular hydrogen column density and temperature. The model required as an input a reconstructed intrinsic Lyman α profile which served as the pumping radiation for the molecular hydrogen. We found that an atomic hydrogen column density of \( \log_{10}N(\text{H} \, \text{I}) = 14.13 \pm 0.16 \, \text{cm}^{-2} \) represents a breaking point above which there is not enough Lyman α flux available to excite a significant molecular hydrogen population into the [1, 7] state. We also present H2 temperatures which may suggest that star spots on low mass stars persist longer, and encompass more area than star spots on solar-type stars.

**Title:** The Total Synthesis of Membranolide A as a Route Towards Various Natural Products.  
**Name:** Robert Feeney  
**Mentor(s):** James Leahy  
**Program:** Chemistry  
Abstract : Biochemical evolution has led to the development of an abundant source of structurally diverse and complex natural products. Biologists and synthetic chemists have learned to identify and tweak these endogenous compounds for the sake of optimizing their efficacy. Within the process of drug discovery these compounds are tested in high throughput screens (HTS) in order to determine their potential biological activity. From these screens candidates are selected which may become lead compounds in a drug discovery campaign. A group of natural products called membranolides found in an Antarctic sea sponge, Dendrilla Membranosa, have shown activity against ESKAPE pathogens in an HTS performed at USF. An enantioselective total synthesis was then developed for the membranolide A in order to create a route to synthesize analogs by modifying substituent groups. The analogs will then be screened with the hope of optimizing the biological activity against the ESKAPE pathogens. The following outlines the total synthesis of membranolide A and possible routes towards various analogs, including membranolides and the never before synthesized group of compounds named oxeatamides.
Title: Physical Activity & Fatigue among Breast Cancer Survivors  
Name: Cecelia Ferguson  
Mentor(s): Sarah Eisel  
Program: Aging Sciences  
Abstract: Increases in early detection and treatment advancements have resulted in more than 15.5 million U.S. cancer survivors. Living as a survivor can involve managing several health challenges. Fatigue is the most common and distressing symptom reported by cancer survivors. Physical activity has been shown to play a role in reducing fatigue, regaining physical functioning, and improving quality of life. Outside of intervention studies, few have examined the effect of physical activity among breast cancer survivors. The aim of the study was to investigate the relationship between reports of physical activity and fatigue. For 14 days, 47 breast cancer survivors (mean age of 53) completed daily dairies on study provided smartphones. Participants reported physical activity duration and fatigue intensity before bed each night. A correlation was calculated to examine the relationship between reported physical activity and fatigue. A significant positive correlation was found, \( r (45) = .29, p < .05 \), indicating that engaging in physical activity was associated with increased fatigue. In conclusion, it appears that survivors who report higher levels of physical activity also report higher levels of fatigue when asked in a daily dairy before bed. Reporting physical activity and fatigue before bed may have influenced the direction of this relationship because levels of fatigue may be elevated at night. Determining that a significant relationship exists has important implications for guiding health care practices and interventions that can improve health. To better understand these results, future studies should include objective assessments of physical activity and multiple assessments of fatigue throughout the day.

Title: Virginity in Saints’ Lives Literature  
Name: Katharine Fintak  
Mentor(s): Michael Heyes  
Program: History and Religious Studies  
Abstract: In Saints’ Lives literature, there is a tension between the religious value of virginity and the social hardship of virginity. This suggests that there is ambivalence toward the vow of virginity taken by a religious woman, and it seems as if virginity is something to be destroyed in some medieval narratives. If such a high value is placed on the religious ideal of virginity, why exactly is it that we see virgins placed in unsavory situations, and met with obstacles that attempt to take away their purity? Looking particularly at hagiographical works like those found in The Golden Legend by Jacobus de Voragine, this paper will look at the cultural construction of virginity and female identity. Saint Agnes, one of the twenty female virgin martyrs in The Golden Legend, was wanted by the prefect’s son as a wife but she rejected him. Receiving threats, Agnes was stripped naked and eventually thrown into a fire. Similarly, Saint Agatha was sought after by a consular official, Quintianus. When she rejected him she was thrown in jail and tortured. Christina of Markyate overcame obstacles that included an attempt by her parents to rid her of her virginity. I will argue that the religious virgin is faced with obstacles in the medieval narrative because of the societal expectation of women to enter into marriage as well as to show the ultimate power of the religious ideal.
**Title:** Assessment of Neuroinflammation Throughout Aging in a Mouse Model of Alzheimer's Disease  
**Name:** Carla Formoso Pico  
**Mentor(s):** Aurelie Joly Amado  
**Program:** Cell and Molecular Biology  

Abstract: Alzheimer's disease (AD) is a neurodegenerative disease whose behavioral and cognitive symptomatology includes mainly memory loss. As for its neuropathology, the hallmarks are two: deposits of amyloid-beta protein that appear as plaques, and the presence of tau protein in its hyperphosphorylated state forming fibrillary tangles. It is known that the brain has an inflammatory response to these lesions, which has been discussed to contribute to the progressive degeneration of the brain. Paradoxically, neuroinflammation could either alleviate or precipitate the lesions. The characteristics of the immune response have been shown to change throughout aging, but the relationship between inflammation caused by tau lesions and aging is poorly understood. The purpose of this study is to delve into this relationship, looking for neuroinflammation across different age groups in a mouse model of tau deposition. Tg4510 mice, carrying human four-repeat tau with the P301L mutation and the Camk-II tetracycline-controlled transactivator protein were used. Their nontransgenic littermates were used as a control group. Different age groups were included starting from 1.5 to 20 months, with n=1-9. Neuroinflammation was assessed by staining using GFAP (astrocytes), Iba-1 (microglia) and comparing to tau pathology (AT8). As expected, we saw an increase in Iba-1 in the Tg4510 mice throughout increasing age groups alongside an increase in pathology. Future studies will analyze different inflammation markers and will inform of the existence of a correlation with pathology.

**Title:** Cybersecurity: A Look in the Past of Identity Theft to Protect the Future  
**Name:** Kaitlyn Franza  
**Mentor(s):** Gert Jan de Vreede  
**Program:** Business Analytics and Information Systems; Business Honors Program  

Abstract: As technology is making leaps and strides in the term of advancements, the threats associated with them is also skyrocketing. The newer generations are growing up with more access to technology, which is causing the impact of these attacks to increase in severity. One of the main concerns in today’s age is identity theft, especially with the use of social networking sites is becoming more common. How are social networking sites using technology to combat identity theft and maintain the highest level of privacy? While reading into the history of identity theft, I saw some protocols that would better mitigate the identity theft risk over social networking sites. In this thesis I followed the Design Science Research method to create a mobile application that effectively utilizes these protocols. The aim of this research is to determine if the protocols selected will decrease the risk of identity theft over social networking apps. Since more and more people are signing up for social networking sites daily, this research should help combat the rising number of identity theft attacks across those sites.
Title: The Effect of Natural and Chemical Treatments of Bamboo Wells on Quality of Water Groundwater  
Name: Simone Frauenfelder  
Mentor(s): James Mihelcic  
Program: Engineering  
Abstract: Globally, one in ten people don’t have access to clean water and the goal of providing clean water access to all people is 27 years behind schedule. At the current rate all low-income countries will not have clean water until 2057. Therefore there is a need for innovative alternatives to the standard drinking well to support the need for sustainability due to climate change and the rapidly growing world population. Bamboo is a viable option for low cost and appropriate well casting material because of its fast growth, engineering properties and it grows in all continents excluding Antarctica and Europe. Drinking wells made from bamboo are economical and easy to install however the best treatment to ensure longevity of the bamboo from microbial attack has not been identified. The primary research question of this study is: Which treatment (boric acid, coconut water, or no treatment) provides the least impact on the pH and microbial water quality from the water attained from bamboo wells? The research is conducted from the four bamboo wells installed in the Geopark at university of South Florida. One well has no treatment, two wells have coconut oil treatment, and one well is treated with boric acid treatment. Throughout the past year, samples of water from the wells were periodically collected and tested for total coliforms and E coli using the IDEXX method), the pH (using a pH meter) and total amount of boric acid. The results suggest that the treatments have no impact on the water quality of the groundwater obtained from the bamboo wells. In the future, bamboo wells could be a sustainable option for developing nations.

Title: The Role of Aquatic Biofilms in Limestone Dissolution  
Name: Victoria Frazier, Areeba Keshwani  
Mentor(s): James Garey  
Program: Microbiology  
Abstract: The rate of limestone dissolution in karst systems can be influenced by a wide variety of chemical, mechanical, and biological factors. Most previous research has centered on dissolution of limestone via abiotic factors including acidity due to dissolved CO2, flow rates, salinity, or carbonate solubility. The contribution of biofilms to limestone dissolution has previously been explored in inland freshwater and sulfidic cave systems but not yet in a coastal spring with marine influence, as studied here. The research questions to be investigated are: to what extent do biofilms contribute to limestone dissolution? What are the characteristics of the microbial community and its environment, and how could these factors be related to their role in dissolution? The relative abundances of Eukarya, Bacteria, and Archaea in the biofilm will be found using LH-PCR. Chemical analysis of ambient water will also be performed. Rates of limestone dissolution were determined using an in situ experiment consisting of pre-weighed limestone rocks of similar sizes that were placed in brackish Double Keyhole Spring for approximately two and a half years. The rocks were placed under control, low flow, and high flow conditions to differentiate between mechanical and biological weathering. The expectations of this research are that significant mass will be lost through dissolution in the presence of biofilm and in the absence of turbid flow. The study of limestone dissolution is important to understanding conduit, cave, and sinkhole formation.
in Florida. This research will contribute new knowledge regarding the influence of biofilms on carbonate dissolution as well as the environmental factors that may impact microbe-driven dissolution.

**Title: The Role of The Great Chain of Being in Medieval Politics**  
**Name: Kiley Fuller**  
**Mentor(s): Michael Heyes**  
**Program: History**  
Abstract: The Great Chain of Being, rooted in the philosophy of Plato and Aristotle, suggests that every being in the universe has its own place and purpose in a divinely planned hierarchy. The Great Chain of Being greatly influenced the development of the concepts “Good” and “Evil” in the Medieval Era and subsequently the development of Medieval society and political hierarchy. This paper delves into the complexities of the Great Chain of Being and applies this concept to an analysis of Medieval society. The Great Chain of being created extensive moral ramifications for those who chose to live outside of their divinely ordained role in society, which subsequently led to several changes in politics in the Middle Ages, and the centuries after. Through an analysis of several sources, I will argue that concrete notions of good and evil gave way to a need for a political structure which granted power to a divinely ordained monarchy.

**Title: Impact of Brain Training on Useful Field of View Performance and Everyday Cognition in Parkinson’s Disease**  
**Name: Angela Gabay, Sarah Blackstone**  
**Mentor(s): Jerri Edwards, Bernadette Fausto**  
**Program: Biomedical Sciences**  
Abstract: Parkinson’s disease (PD) is a neurological disease characterized by motor symptoms such as tremors as well as non-motor symptoms including slowed speed of processing. Despite evidence that cognitive training enhances cognition in healthy older adults, few studies have investigated nonpharmacological interventions to treat the cognitive sequelae of PD. Thus, the effects of cognitive training in older adults with PD remain uncertain. The purpose of this study was to examine the efficacy of computerized cognitive training to enhance Useful Field of View (UFOV) and self-reported everyday cognition among older adults with PD. Methods: Twenty-two older adults with PD (Mage=66.96 years, Meducation=15.68 years, 27.3% female) were randomized to either computerized cognitive training (n=13) or cognitive stimulation (n=9). Participants completed the UFOV test and the Neuro Quality of Life Cognitive Function (NeuroQOL–Cog) subscale before and after completing their assigned condition. Preliminary findings indicate that those randomized to cognitive training improved cognitive performance as measured by UFOV (d=0.33), but did not report better cognition as indicated by the NeuroQOL-Cog questionnaire. Among older adults with PD, cognitive training may result in small improvements in UFOV performance, but such improvements are not evident to participants. The small sample size and lack of statistical power limited ability to detect significant training effects.
Title: Student Learning Based on the 10-2-10
Name: Grace Gardner
Mentor(s): Laura Sabella
Program: Secondary Mathematics Education
Abstract: Transitioning from the theory of coursework to the practice of teaching is challenging. This time typically occurs at the end of an education program in a final internship. In Florida, education majors must ask the question “What is my impact on student learning?” as part of their final internship. This study takes place in the final internship of a Mathematics Education Major in a 11th grade Intensive class of an urban school in a large metropolitan school district. A class of 10 students was taught systems of equations using multiple teaching strategies designed to increase students’ engagement: video clips, games/interactive activities, and collaborative text exercises. A pre-test of basic understanding was administered and a post-test demonstrating their understanding of the math three days later. Whole class results are examined from pre- to post-test. Further, the results of two students, one a boy from a low SES background, and another, a girl with a GPA under the required 2.0, are compared. The results will show the impact on student learning and whether the activities engaged the students in learning. In particular, the results will identify the totality of the impact of the three instructional activities on overall learning of transformations as revealed through scores from pre- to post-test results.

Title: Needs Assessment of Problem-Solving Courts in Hillsborough County
Name: T. Freeman Gerhardt
Mentor(s): Kathleen Moore
Program: Psychology & Behavioral Healthcare
Abstract: In Hillsborough County, nearly 326,000 people over the age of 12 reported that they used an illicit drug in the past year, 8% were classified as having a substance use disorder, and nearly 8% of residents experienced a major depressive episode in the past year. Consequently, a significant number of individuals with a mental illness, substance abuse disorder, or a co-occurring mental illness and substance abuse disorder are cycled through homeless facilities, emergency rooms, and jails, which creates immense costs for these publicly funded systems. Hillsborough County has responded by implementing six problem-solving courts i.e. Veterans Treatment Court, Marchman Court, Adult Drug Court, Juvenile Drug Court, Mental Health Court, and Family Dependency Treatment Court. However, no research exists on the efficacy or alignment of these county-specific services with the evidence-based standards outlined in the protocols of problem-solving courts nationwide. Therefore, this study asks what are the strengths and gaps in services of these problem-solving courts and their associated treatment agencies.
A needs assessment survey was developed using Qualtrics and disseminated to various treatment providers associated with the problem-solving courts in Hillsborough County. Once the providers respond to the survey, follow-up qualitative interviews will be conducted. Therefore, data collection is still in progress. However, it is expected that there will be sufficient gaps in service provision and misalignment with evidence-based standards. Consequently, this study represents a significant step forward in the treatment of those with a mental health, substance abuse, or co-occurring mental health and substance abuse disorder in Hillsborough County.
**Title:** Expanding Best Practices in the Marchman Act Drug Court Treatment Program of Hillsborough County, Florida: Leveraging Strengths Through Recovery Support and Barrier Reduction.

**Name:** Robyn Gerry  
**Mentor(s):** Kathleen Moore  
**Program:** Behavioral Healthcare

**Abstract:** Our nation’s jail and prison populations are exploding. Nearly 73 per cent of inmate populations have been incarcerated, in whole or in part, due to substance use and related activities (NADCP, 2008). Florida’s Substance Abuse and Impairment Act, known as the Marchman Act, permits voluntary or involuntary admission of individuals for assessment and treatment of substance abuse through Marchman Courts. Florida legislation (2001) mandated drug courts be implemented “in each judicial circuit in an effort to reduce crime and recidivism” recognizing “integration of judicial supervision, accountability and sanctions greatly increases the effectiveness of treatment”. Manifesting a translational continuation of my 2016 USF OUR presentation, this project is bidirectional. The Substance Abuse and Mental Health Services Administration (SAMHSA) funded the 3-year “Grant to Expand Substance Abuse Treatment Capacity in Adult Treatment Drug Courts” in 2015. Data collected will be evaluated through multivariate regression, including findings from USF Summer Research Institute, 2016. The Marchman Act Drug Court Treatment (MADCT) program forms a collaborative services effort via the Administrative Offices of the Court (AOC), Drug Abuse Comprehensive Coordinating Office (DACCO), Phoenix House and University of South Florida’s Louis De La Parte Florida Mental Health Institute (FMHI). My original research question, “Does expanding treatment capacity reduce recidivism while increasing positive outcomes for Marchman Court respondents?” requires further exploration. I hypothesize that expanding evidence-based treatment practices will demonstrate positive recovery outcomes, decreased relapse incidents, while reducing recidivism and overall costs. Family burden measures will be developed and considered. Families are key stakeholders in recovery.

**Title:** A Classification of Suicidality Disorder Phenotypes  
**Name:** Jennifer Giddens  
**Mentor(s):** David Sheehan  
**Program:** Religious Studies

**Abstract:** Background: Suicide is the 10th leading cause of death in the United States and 14th leading cause of death world-wide. Aim: To provide a classification of suicidality disorder phenotypes. The view that suicidality is trans-nosological and that all forms of suicide are the same, is not consistent with response to pharmacological treatment evidence. For example, antidepressants make suicidality better in some patients, worse in others, and are no better than placebo for a third group – suggesting there may be more than one type of suicidality. We used a phenomenological approach by observing in detail and directly communicating with subjects over time about their suicidality. Results: We developed diagnostic criteria and a related structured diagnostic interview for 12 distinct suicidality disorder phenotypes. 1) Impulse Attack Suicidality Disorders, 2) Homicidal Suicidality Disorders, 3) Psychotic Suicidality Disorders, 4) Obsessive Compulsive Suicidality Disorders, 5) PTSD Suicidality Disorders, 6) Eating Disorder/Malabsorption Suicidality Disorders, 7) Substance Induced Suicidality Disorders, 8)
Medical Illness/Neurological Condition Induced Suicidality Disorders, 9) Anxiety Disorder Induced Suicidality Disorders, 10) Mood Disorder Induced Suicidality Disorders, 11) Life Event Induced Suicidality Disorders, and 12) Suicidality Disorders, Not Elsewhere Classified. Among these phenotypes the description of Impulse Attack Suicidality Disorder is new. This disorder is associated with unexpected, unprovoked, unpredictable attacks of an urgent need to kill oneself. Conclusion: We offer 12 suicidality disorder phenotypes. Because these phenotypes may have a different response to treatment, each phenotype should be investigated separately when investigating anti-suicidality treatments and when investigating the relationship between genetic and other biomarkers in suicidality.

Title: Intern Impact on Student Education
Name: Lindsey Glenn
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: Moving on from theoretical college coursework to the actual implementation of learning strategies and the complex practice of teaching is a challenging task. This transition typically occurs in the final semester of college study, during a final internship with an education program. As a student who is becoming the teacher, one must ask “How am I impacting student learning?” in preparation of the completion of a final internship. This study focuses on the final internship of a Secondary English Education Major in a tenth-grade language arts class of an urban school in a diverse, highly-populated school district. In total, 99 students were taught to implement three components successfully into their writing: claim, commentary, and evidence. Students were taught using strategies designed to encourage higher-level thinking; including graphic organizers, highlighting activities, and collaborative revision. An initial quick write was implemented for the researcher to gauge student understanding and create an appropriate course of action. Whole class results are examined from the initial quick write, to a complete re-written revision. Additionally, included are the results from two ELL students, and two students classified to have a specific learning disability (SLD). The results will show the impact that these revision lessons have had on student learning, and whether they produced improved writing. In total, the results will identify the specific areas (claim, commentary, and evidence) in which students did or did show improvement – i.e. originality of commentary, reliability of evidence, and strength of claim.

Title: More than Matter
Name: Gviana Goldberg
Mentor(s): Lisa Piazza, Sherrisse Bryant
Program: Anthropology
Abstract: Kinetic Molecular Theory is a series of five postulates that explains the behavior of an “ideal gas” which does not exist in reality but aids in studying how gasses react according to their environment. Gasses in reality defy their behavior proposed by this theory due to forces between the molecules otherwise known as intermolecular forces. This research project investigates how the behavior of humans mimics the behavior of gasses including the defiance of their own proposed behavior. To test this I am proposing a “human” version of KMT which involves filming the activity of people in a natural setting and seeing how their behavior matches or defies that of the theory. This is an exploratory study that offers a surface example of the infinite ways in which the
behavior of units of matter and the behavior of humans mimic each other, the larger base theory behind this research. I propose this interdisciplinary perspective should further open the dialogue regarding the connection of these topics: chemistry, anthropology and art. A possible implication of this study is the potential for a new and improved way to teach the subjects.

**Title:** Rememory Portal  
**Name:** Catherine Gomez  
**Mentor(s):** Jason Lazarus  
**Program:** Studio Art  
Abstract: This research seeks to study Toni Morrison’s coined idea of ‘Rememory’, where a location or object holds a memory that is accessible to any person that encounters it. The research included various readings, a creative essay project, experimental photograms, and analyzing artists who explore memory such as Aspen Mays, Walead Beshty, Jason Lazarus, and Edison Penafiel. My motivation to pursue this type of research came from Morrison’s work Beloved, and how the concept of ‘Rememory’ could be used to inspire an authentic spark of empathy in-between viewers. The expectations for this project are to produce a series of experimental photograms that will then be processed digitally and reproduced in an ink jet print format. The prints will hope to find a point of entry, like that described by Morrison, where the viewer can engage in an egalitarian space that dissolves social barriers. The larger implications of this work will be a hopeful dissipation of the gulf that stands between viewers by igniting an authentic connection to a culture that we might ‘other. In future research I hope to further explore work that through abstraction can create cross-cultural communication.

**Title:** Impact on Student Learning Analysis  
**Name:** Casey Hamilton  
**Mentor(s):** Laura Sabella  
**Program:** Secondary English Education  
Abstract: Students in a middle school setting have been shown to be apathetic when it comes to the education system. With the advent of social media and instant gratification, they have not learned the skill of patience. They need opportunities to interact with their peers in a cooperative setting, and less of an emphasis on drill and practice. This study takes place in an 8th grade honors English Language Arts classroom, located in a middle class neighborhood. A class of 22 students was taught using multiple activities designed to increase cooperative learning and performance in the classroom: theater games, jigsaw activities, selective annotation, and dramatic performance. A pre-test, centered on types/forms of comedy, was given to the students at the start of the unit, and a post-test was given a week afterward. Whole class results are examined from pre- to post-test. Further, the results of two students, one an ELL boy in the speech emergent stage, and another, a deaf boy with only one cochlear implant, are compared. The results will show the impact on student learning and whether the performance activities used in the students’ instruction enhanced their performance on the test given. In particular, the main focus of this study is to see if performance opportunities in the classroom lead to higher student engagement and comprehension of subject material.
**Title: Teaching Social Studies in 15 Minutes**
**Name:** Autumn Handin  
**Mentor(s):** Jennifer Jacobs  
**Program:** Elementary Education

Abstract: One challenge elementary teachers face is finding time to teach all subjects within the day. With calls to increase children’s ability to read as well as become proficient in math, social studies is often a subject that is marginalized within the elementary classroom. There just never seems to be time for social studies. Since day one of my teaching internship, I was given the responsibility for teaching social studies. As a teacher who never particularly enjoyed social studies as a K-12 student, my love for social studies has grown as I have started to experiment with a variety of methods and techniques in the thirty-minute weekly timeslot. My research question was, how can I effectively teach social studies in fifteen minute blocks? This research focuses on pedagogical strategies and assessments that allow teachers to take advantage of the short amount of class time for social studies. Technology, movement, and cooperative learning are just some of the strategies used to maximize time in an engaging and meaningful way. The findings based on data indicate increased engagement with cooperative learning strategies, and decreased interest and achievement with more passive learning through direct instruction. By examining different techniques in my social studies block, I encouraged students to view this subject as meaningful, relevant, and one that holds a strong purpose in society. Social studies is often pushed aside in elementary schools, however it can be taught effectively by understanding its purpose, planning for it thoughtfully, and teaching it in an engaging way.

---

**Title: Perceptions of Autism between CSD and non-CSD Majors**
**Name:** Sarah Hannah  
**Mentor(s):** Steven Surrency, Yagmur Seven  
**Program:** Communication Sciences and Disorders

Abstract: In recent years there has been an increase in the number of individuals diagnosed with Autism Spectrum Disorder (ASD) (Hansen, Schendel, & Parner, 2015). Autism Spectrum Disorder is a pervasive developmental disorder with persistent deficits in social communication and interaction (DSM-5 Diagnostic Criteria, 2013). Despite the attempts to uncover the origins of the disorder, no study has indicated an etiologic explanation for ASD to set standardized diagnostic criteria. The opinions of individuals towards autism and its causes vary based on the background knowledge, experience and culture (Furnham & Buck, 2003). Students majoring in Communication Sciences and Disorders are required to attend courses entailing characteristics and etiology of ASD and may work closely with individuals with autism since children with autism are more likely to struggle with an assortment of language delays and impairments. This research project seeks to answer if students in CSD hold significantly different views on ASD and its etiology than the students in other majors. A concise survey on the perceptions of Autism Spectrum Disorder will be implemented to ask opinions of 25 CSD students vs. 25 non-CSD students from USF. The survey responses will be evaluated with a T-test to see if the two groups (CSD and non-CSD majors) have significantly different opinions on the origins of autism.
Title: This Party Needs a Facelift: How the Republican Party’s Messaging Toward Millennials Must be Improved to Fit the 21st Century  
Name: Christopher Happel  
Mentor(s): Susan MacManus  
Program: Political Science  
Abstract: In today’s political environment, Americans are very much divided along party lines. In particular, the newest and largest generation, the Millennials, having grown up under such hostile and disunited conditions that many refuse to so much as participate in elections. As a result of millennials’ contempt for both major political parties in the United States, millennial voter registration for No Party Affiliation (NPA) is extremely high. The Republican Party, in particular, has had trouble recruiting millennials to join its movement. If the Republican Party wants to thrive in the 21st century and beyond, then the Republican Party must give voice to aspiring Millennial Republicans who wish to grow the movement that they feel truly represents them. Both qualitative and quantitative research will be utilized to explain trends among millennials and millennial Republicans. Personal interviews with millennial Republicans independents, exit polls, Census data, and issue-based polling will be used to discover the problems that the Republican Party faces, and the solutions that the Republican Party should pursue. The research hopes to find a consensus among millennials for the reasons behind the lack of support for the Republican Party among their generation. The research also seeks to discover the issues that the Republican Party faces with messaging toward millennials, as well as suggestions for improving messaging and growth going forward. Future research and action will consist of working within the Republican Party to implement these recommendations, and to suggest new initiatives to party leaders who wish to increase support for their values.

Title: Experiences of Study Abroad and its Long Term Effects  
Name: Kira Harding  
Mentor(s): Nicole Tracy-Ventura  
Program: Cell and Molecular Biology  
Abstract: The Erasmus program was established to increase inter-European collaboration by providing an opportunity for students to work and study abroad (Coleman, 2015). Evaluative studies support the success of the program, but also reveal a decline in reported benefits for participants since its inception (Engel, 2010). Little is known about what specific aspects of the program were perceived to be most beneficial to students’ personal and academic development, and how those experiences remain relevant over time. Students (n=15) studying Spanish and taking part in the Erasmus program were interviewed at the end of their yearlong study abroad program and three years after graduation. A thematic analysis using NVivo was conducted to reveal common patterns. Preliminary results suggest that during study abroad, students’ perceived the greatest benefit to be their language learning. They often cited living with Spanish people and being “completely out of your comfort zone” as the most helpful experiences in language improvement. Three years after graduation, the students reported that these experiences were crucial to the development of interpersonal skills and cultural awareness that are beneficial not only to language maintenance, but also personal relationships and career goals. Study abroad programs like Erasmus are considered an important academic tool for fostering international relations and global awareness. This evaluation of the perceived strengths of the Erasmus program
could provide key insights into how study abroad programs can be structured and improved upon to achieve these goals, and more fully address the personal benefits that inherently result from them.

**Title:** Fantastic Satire: Travel Narratives from the East and West  
**Name:** Kylene Harrington  
**Mentor(s):** Quyhn Nhu Le  
**Program:** English

Abstract: The travel narrative is a medium that gives readers sociopolitical perspective while exercising the imagination by creating a landscape of new possibilities. Travel narratives document information about lands and cultures foreign to their authors while inspiring imagination within their writers and readers. English travel narratives in the 18th century functioned as such, emphasizing themes of discovery and otherness through an imperialistic lens. Ming Dynasty travel narratives were popular for many of the same reasons. Whereas English travel narratives spoke of adventures in the east, Chinese travel narratives journeyed west. As early as the fifth and seventh centuries, Buddhist monks have documented their westward travels from China to India. The most popular of these journeys is that of the monk Xuanzang, to the point where his narrative has been immortalized in fiction (most notably in the 16th century novel, Journey to the West). This paper investigates how travel narratives could have contributed to the development of British and Chinese storytelling by comparing Jonathan Swift’s Gulliver’s Travels (1726) and Wu Cheng’en’s Journey to the West (1592). Despite the time gap between them, both works are iconic satires in the guise of travel narratives that lampoon their respective societies through fantasy fiction. The paper examines how these works build on and play with the established reputation of the travel narrative in their respective societies by looking extensively at both texts, articles that deal with their literary importance, and the geopolitical history of their origin countries.

**Title:** Mutable Marie  
**Name:** Kaitlin Harrington  
**Mentor(s):** Pamela Brekka  
**Program:** Studio Art

Abstract: Marie Antoinette was my favorite queen from a young age known as the beheaded queen who said let them eat cake. My goal was to explore what influenced these assumptions pinned against her by looking at images of Marie Antoinette over time, and how society’s perspective of her changes over time. This research project represents an artistic exploration of contemporary pop culture imagery of the French Monarch Marie Antoinette to demonstrate the mutable nature of how society interprets this historical figure. To answer my research question I conducted a mini-literature review to learn more about the biography of Marie Antoinette. I also photographed places in Paris, France influenced by or otherwise connected to Marie Antoinette. I corresponded with a well-known author who has recently written a book on Marie Antoinette to get another perspective from someone well advanced with the subject. My findings were used to inform my research project, an art project that expresses the “mutable” nature of this cultural icon. My research represents a visual exploration of the many labels associated with this historical figure. I learned that society’s view on Marie Antoinette is ever changing and this did have very adverse effects on her life.
**Title:** Analysis of the Magnetic Order of Artificial Ferromagnetic Quasicrystals  
**Name:** Nathan Hayford  
**Mentor(s):** David Rabson  
**Program:** Physics  
Abstract: This paper analyzes the magnetic order of a sample artificial ferromagnetic quasicrystal, provided by L.E. De Long, B. Farmer, et al [1], using computational crystallographic methods. We present two practical measures of magnetic order for the sample, along with advantages and shortcomings of each. Upon determination of the moderate ‘amount of order’ of the sample, we briefly discuss the existence of the non trivial spin-space group of the sample. Directions of further research and propositions on refinements to the experiment are also proposed. The interest in identifying and measuring the magnetic order of artificial magnetic quasicrystals comes from an engineering/materials perspective in that such materials could be of use in industry; and from a crystallographic perspective, the classification of previously undiscovered spin-space groups would be significant findings.

**Title:** Measuring Students Cognitive Thinking Through the Use of Nuclear Magnetic Resonance: Glycolysis and C13 NMR Spin Spy  
**Name:** Danielle Hebert  
**Mentor(s):** Edwin Rivera, Arthur Maknenko  
**Program:** Biomedical Sciences  
Abstract: The common model used to teach glycolysis in biochemistry courses is a theoretical mode of instruction with no laboratory experimentation. By implementing 13C nuclear magnetic resonance in the biochemistry lab courses, a practical way to learn glycolysis will promote student success. Using NMR spectroscopy, students will catalyze their cognitive understanding of biochemistry principles like glycolysis. The research will consist of hands-on NMR spectroscopy, which will illustrate carbon signals changing during sub-sequential steps of glycolysis during alcohol fermentation. The 13C NMR will allow the glucose carbon skeleton changes that occur within yeast reaction within a buffered solution, to be monitored via timed-interval. Students will be assessed via fill-in the chart diagrams prior and post to the experiment to assess how their knowledge of glycolysis has improved. The assessments developed will be used in measuring their academic growth during this course. The research outcome will enhance student knowledge with greater in-depth understanding of the following subjects: biochemical processes, kinetics, critical thinking by experimental design using NMR, better technical skills in operating a scientific instruments to aid and further their chemical journey. Additional research will look at implementing NMR to further understand the Krebs cycle.

**Title:** How Affluence and Muslim Cultural Values Impact the View on Disability in the United Arab Emirates, Saudi Arabia, and Oman  
**Name:** Anna Hemminger  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences  
Abstract: The quickly-developing city of Dubai has seen a rise in the creation of new infrastructure
as well as a large influx of tourism in the past ten years. With this increase of traffic, the question of whether accommodations for people with disabilities have flourished has been raised. Dubai has promised to become one of the world’s most disability-friendly cities, but the surrounding areas may not have the same priorities due to a number of different reasons. This study analyzes how Muslim cultural values and the availability of resources impact the views towards those with disabilities with a concentration on how they impact women and children. The current views towards people with disabilities in the United Arab Emirates, Saudi Arabia, and Oman are taken into account. Through a detailed analysis of the City of Dubai’s government website, as well as input from those who have lived in the United Arab Emirates and surrounding countries, this study explores attitudes that suggest that Dubai’s prosperity has a positive correlation with supportive views towards disabilities. Further research may be done as Dubai continues to create new infrastructure and implement additional policies to assist those with disabilities.

Title: Function of Second Moment of Area in the Jaw of the Durophagous Bonnethead Shark, Sphyrna tiburo
Name: Amanda Herbert
Mentor(s): Philip Motta
Program: Marine Biology
Abstract: Durophagy in chondrichthyan fishes involves more than possessing crushing/molariform teeth. Since chondrichthyans possess a skeleton made of cartilage, adaptations are necessary for them to feed on durophagous prey. The jaws of chondrichthyans have tesserae, which creates a mineralized cortex and increases stiffness. Stiffness is measured by second moment of area (I), which uses the neutral axis of an object to calculate the extent to which the object can resist bending. This study investigated whether the jaws of the bonnethead shark, Sphyrna tiburo, are stiffer under the crushing/molariform teeth compared to the grasping teeth and to document the gradient of stiffness along the lower jaw as the teeth transform from grasping to crushing. Using computerized tomography (CT) scanning, the jaws of 10 bonnethead sharks were visualized. Digitally reslicing the CT scans allowed the measurement of I at identical positions along the jaw for all specimens. I was calculated two ways since the ventral portion of the lower jaw is angled towards the interior of the mouth of the shark. The first, Ioptimal, was calculated with the line of force parallel to the angle of the jaw. The second, Isuboptimal, was calculated with the line of force perpendicular to the occlusal surface of the teeth. No statistically significant difference was found between Ioptimal and Isuboptimal. I increased along the lower jaw from anterior to posterior as the teeth transform from grasping to crushing. These results suggest S. tiburo utilize their tesserae and shape of their jaw to successfully feed on durophagous prey.

Title: Treating Malaria: Synthesis of an anti-Plasmodium Analog of Aurachin D
Name: David Herrera-Perez, Aaron Astalos
Mentor(s): James Leahy
Program: Chemistry
Abstract: Malaria is a dangerous disease found in the tropical and subtropical areas of the world.
The disease spreads by the female of the Anopheles species of mosquitoes. The parasite, from the genus Plasmodium, has two growth cycles. In the Sporogonic Cycle it grows and multiplies inside the mosquito vector. Once transferred to human host via mosquito bite, the parasite begins a separate, two-stage growth cycle where it infects liver cells and eventually RBCs to reproduce asexually and rupture host cells. The disease affects many developing countries in South Africa and Oceania regions which struggle with treatment due to high costs and poor standard of care. These conditions called for the development of a drug candidate that is be effective and cheap to produce. Based on previous research, it was discovered that Aurachin D, a natural product made by myxobacterium Stigmatella aurantiaca was active in inhibition of the Plasmodium parasites. Therefore a synthesis of 3-isopentyl-2-methylquinolin-4(1H)-one, an analog of Aurachin D, was performed and tested for activity as an anti-Plasmodium drug candidate. Furthermore, a series of lead optimization studies are underway. The studies show which analog will possess the greatest activity to serve as a drug candidate. The first intermediate, compound 2-methylquinolin-4(1H)-one proved difficult to isolate via standard purification methods, therefore an alternative synthetic approach with no purification steps is currently being explored.

**Title:** Student Engagement  
**Name:** Emily Heuer  
**Mentor(s):** Laura Sabella  
**Program:** Secondary English Education  
**Abstract:** Engaging students in meaningful learning can be a challenging task for many secondary educators, especially at the high school level. Disengagement is a daily obstacle for teachers and students. This study looks to challenge the disengagement of high school students. This study takes places in a 12th grade English Honors class at a highly diverse school, located in a developing area. A class of sixteen students were taught irony using three lessons designed to engage students with strategies such as video-clips, varying types of discussion, and movement. A pre-test of identifying forms of irony was given before the set of lessons began and a post-test was given after the three lessons were taught Whole class results are examined from pre-test to post-test. The results of two students, one a seventeen-year-old high-performing Hispanic female student and one seventeen-year-old low-performing Black student will be examined further. The results will show the impact on student engagement. In totality, the results will indicate the impact of the specific strategies implemented throughout the three lessons on the engagement of students.

**Title:** Alcohol Consumption and Cognitive Decline in Early Old Age  
**Name:** Yen Linh Ho  
**Mentor(s):** Ross Andel, Nasreen Sadeq  
**Program:** Integrative Animal Biology, Psychology  
**Abstract:** Alcohol may affect cognitive aging but this association remains unclear. Studies suggest that drinking in moderation is either not associated with cognition or is associated with better cognition compared to abstainers, while heavy drinking appears to accelerated cognitive aging. We examined whether these same trends occur on a computerized screening tool for cognition. Participants in the cognitive monitoring study in the USF CogState Lab received a questionnaire to self-report their drinking habits during a typical week. This information was compared to performance on the CogState Brief Battery, which is a brief self-screening, interactive online
program that includes four different cognitive tests—Detection and Identification, which measure primarily speed of processing, and One Card Learning and One Back tests, which measure primarily working memory. Out of 30 participants surveyed, 34% men and 66% women with an average age of 71.8, 20% abstained from alcohol in the past year, while 80% drank. Less than 1% reported binge drinking, which is defined as having 6 or more drinks in one sitting. Drinking did not have an effect on the speed of accuracy of any of the 4 Cogstate tasks. However, a significant correlation was found for binge drinkers and speed on Detection task (p = .029), whereby binge drinkers took longer to complete a reaction time task as compared to those who drink in moderation. Binge drinking may slow speed of processing. This is especially important because speed of processing is among the main early indicators of cognitive impairment.

Title: Business and Medicine
Name: Muna Hobi
Mentor(s): Lindy Davidson
Program: Honor Program/Biomedical Sciences
Abstract: Practicing medicine is considered a business. People go through years of schooling in health fields such as medical, dental, and optometry schools to learn how to be doctors. The one thing these health fields have in common is the fact that they don’t include training on how to run a successful business and practice medicine at the same time. Balancing being a doctor and running a business is demanding and requires discipline. Many people say that running a health care practice like a business will decrease the quality of care provided. By conducting online research and interviewing a verity of business administrators and practitioners I examined the inner workings of healthcare practices. I also examined if applying methods of running a business in the healthcare field can improve the quality of care. Several elements should be considered when examining a healthcare practice, such as the influence of insurance, the efficiency of electronic medical records, and doctor-patient relationship. I found that although running a medical practice involves the principles of owning a business many doctors don’t like to be identified as business owners. After analyzing my research, I found that the quality of care that a doctor provides depends on the role of insurance. I also noticed that in healthcare there isn’t a way to effectively measure the quality of the care provided. Further research can be done on an effective way to measuring the quality of the service provided to patients. This research will benefit future business owners and practitioners.

Title: Strategies to Minimize Stigma Related to Behavioral Health Conditions
Name: Xaris Horta-Pabon, Sarah Bogovic, Kendall Bett, Carmen Concepcion, Abigail Stankiewicz
Mentor(s): Roger Boothroyd, Amber Gum
Program: Behavioral Healthcare
Abstract: Stigma related to behavioral health conditions is a negative influence on the way behavioral health conditions are perceived, treated, and recognized. The aim of this study was to explore students’ perception about strategies to help reduce stigma for behavioral health conditions. Our team developed eight survey items that focused on methods to minimize stigma that were administered as part of a larger survey developed in collaboration with other research groups. These items contained a combination of multiple choice, Likert scale, and qualitative
response types. The Qualtrics survey was distributed via email to every student in the College of Behavioral and Community Sciences (CBCS) at USF. The majority of 137 respondents were white, female and between the ages of 18 and 24. SPSS and the Qualtrics data analysis tool were used to analyze data. After analyzing responses, we found that the major themes that emerged were: education efforts, advocacy and awareness. Based on these findings we concluded that students are more receptive to educational opportunities and peer services than campaigns or legislative action. 76.8% (96) of respondents agreed that the university’s mandatory orientation for all incoming students should include a brief educational event related to behavioral health stigma. Implications of our study suggest a collaborative effort between faculty, students, and mental health professionals to deliver an educational piece about stigma related to behavioral health conditions.

**Title:** The Relative Impact of Evidence Based Instructional Practices in Chemistry through Meta-Analysis  
**Name:** Kristin Houdyshell, Andrew Apugliese, Md Tawabur Rahman  
**Mentor(s):** Scott Lewis  
**Program:** Health Sciences  
**Abstract:** The current Meta-Analysis aims to examine the effects of Process Oriented Guided Inquiry Learning, Peer-Lead Team Learning (PLTL), and collaborative work in the chemistry setting. Previous work shows that the flipped PLTL course structure helps improve students’ test scores or results in decreased dropout rates (improved student retention). The following Meta-Analysis will provide a better understanding of the effects of collaborative work and the impact of this methodology and class structure on chemistry students’ outcomes. Conducting a Meta-Analysis on the effects of the Peer-Lead Team Learning approach, Flipped course approach, and similar methodologies in chemistry courses, provides an opportunity to better analyze and evaluate the varying effects among prior studies. To compile a sample for the meta-analysis, two online search engines were used: ProQuest and Web of Science. In each search engine 19 key phrases, such as “Cooperative Learning,” “Peer Learning,” “Peer Led Team Learning,” and “Group Learning,” were searched—where each term was paired with the word ‘chemistry’ and the date ranges were specified as 2001-2015. Duplicate or irrelevant articles were removed and the remaining articles were downloaded. Moderators, such as type of cooperative learning, type of assessment, and group size, were agreed upon and recorded amongst the selected articles. Analyzing and coding the remaining articles—based on previous search criteria—will allow for greater statistical analysis. The ongoing work in conducting this Meta-Analysis will provide a thorough analysis of the effectiveness of the impact of instructional decisions on student outcomes.

**Title:** Polynomials, Stars, and the Limaçon  
**Name:** Nicole Hudson  
**Mentor(s):** Catherine Bénéteau  
**Program:** Mathematics & Physics  
**Abstract:** There exist many beautiful, intriguing, open questions in Mathematics. Unlike ordinary polynomials of a complex variable z, the Fundamental Theorem of Algebra does not yield information about the number of roots of polynomials containing both z and its complex conjugate. Today, complex analysts and astrophysicists alike are interested in determining an upper bound
for the number of roots of these polynomials; the connection of the two fields comes from the complex formulation of gravitational lensing theory, as the number of roots of certain polynomials corresponds to the number of images of single light sources formed by gravitational lenses. This presentation will begin with a bit of history about gravitational lensing, and an explanation of what is now called ‘the lens equation’. Various techniques which are utilized in the process of finding the roots of the lensing equation will be discussed. These techniques will be applied to an underappreciated shape, the Limaçon, in order to count the number of distinct images of a single light source which could be produced by a lens of this shape. The maximum number predicted by these methods will be presented, as well as a conjecture based on graphical observation. At the end of the presentation, future avenues for research of this open problem, and more general ones, will be mentioned.

**Title:** The Effect of Immersion on Psychological Development While Studying Abroad  
**Name:** Phillip Hurley  
**Mentor(s):** Nicole Trac-Venura  
**Program:** Biomedical Sciences  
**Abstract:** Is it as important as you think to immerse yourself completely in a new culture while studying abroad in order to develop psychologically? While there has been significant research on the difference between psychological development (e.g., confidence, cultural awareness, independence, and social skills—Norris and Dwyer; 2005, Lathrop; 2000) of students in full-immersion study abroad programs compared to less immersive programs, the majority of the literature has drawn conclusions from survey data. While this is useful for examining correlations, it doesn’t necessarily explain the types of experiences that both immersive and less immersive programs have which foster these developments. This study aims to investigate why 32 Erasmus students, on a year-long study abroad trip, reported high levels of psychological development regardless of immersion levels by examining the kinds of experiences that commonly led to this development. To gain a deeper understanding of these relationships, this study analyzes longitudinal interview data collected both during and four years after the participant’s trip abroad. Based on coding using qualitative analysis software (NVivo), the results so far seem to indicate that both low and high immersion groups developed highly in these areas, which suggests that fundamental study abroad experiences shared by participants of varying levels of immersion are the main cause of psychological development. Research has shown that study abroad today is generally influences people’s development less than in the past—insight into the kinds of experiences that foster psychological development could play a key role in the creation of impactful study abroad programs.

**Title:** Israel's Representations of People with Disabilities Contrasted to the Reality  
**Name:** Jocelyn Idrovo  
**Mentor(s):** Lindy Davidson  
**Program:** Women's and Gender Studies  
**Abstract:** Israel and specifically the Israeli Defense Force (IDF), have released video material showing how they are working to give persons with disabilities a path to an independent life capable of benefiting their nation. These include a video detailing a program that allows people with disabilities to volunteer for the IDF. However, considering the tensions of the conflict and
the prevalence of propaganda, this project asks: How do these representations of life as Israelis with disabilities differ from the reality? By reviewing the videos, research on disability in Israel, and personal accounts this project seeks to determine the ways in which the lives of people with disabilities in Israel may differ from the mediated response. The implications of this could be to create a call for more accurate portrayal and research to be conducting concerning this population. This could also bring awareness to potential risks with portraying a population inaccurately for national gain, if that is determined to be a result.

**Title:** Synthesis of Possible E.S.K.A.P.E. Pathogen Medication  
**Name:** Jeffrey Jacobson  
**Mentor(s):** Zachary Shultz  
**Program:** Chemistry  
**Abstract:** The World Health Organization has deemed antimicrobial resistance as one of the three greatest threats to mankind in the 21st century. The most common group of organisms contributing to this hazard are the E.S.K.A.P.E. pathogens. Research done at the Torrey Pines Institute for Molecular Studies proved the ability to synthesize a new group of molecules that have biological activity against these microbes, which includes the molecule of interest in this paper. The synthesis used a novel approach, “Tea Bag” methodology, in which molecules are attached to solid support resin contained in a sealed mesh bag. Although this method was extremely efficient in the synthesis of millions of molecules, it was not a practical way to synthesize large quantities of these molecules. The synthetic route in this paper will allow for greater quantities of the molecule in question to be produced and tested against these pathogens.

**Title:** Women's Sexual Roles in the Middle Ages  
**Name:** Elyana Jadallah  
**Mentor(s):** Michael Heyes  
**Program:** Religious Studies  
**Abstract:** This paper will be an in-depth exploration of the different women’s sexual roles, in the Middle Ages. I will be looking at this time periods views on women’s sexual roles and how it can go two ways, living a life of chastity or in the direction of becoming a prostitute. Women in this time were held to very unrealistic sexual roles, an example of this is seen in Bardsley’s Women’s Roles In The Middle Ages which shows the positive and negative treatment given to women when keeping their virginity. While the polar opposite is shown in the discussion of women and their virginity in Karras’s Common Women: Prostitution and Sexuality in Medieval England where some women were encouraged to engage in acts of prostitution for the mere reasoning of making money. There is a pattern of many drastic role reversals of women in the Middle Ages, for example St. Mary of Egypt going from being a prostitute, to becoming a saint. I will be arguing the reasoning behind women adopting complete opposite sexual roles in the Middle Ages, and how it was even possible for this change to happen.

**Title:** The relationship between women and the demonic in the Middle Ages  
**Name:** Elyana Jadallah  
**Mentor(s):** Michael Heyes  
**Program:** Religious Studies
Abstract: Throughout the Middle Ages we see an across the board depiction on women being evil in many different contexts, or being able to hold evil spirits inside of them. Due to the space where women’s reproductive parts are, it was seen as the perfect place to evil spirits to reside in. I will be discussing the relationship between women being portrayed to have porous bodies and how it was connected to demonic aerial bodies in the Middle Ages. We see the image given to women in Caciola’s Discerning Spirits, as being more venerable, due to their weakness, and their constant changing and impressionable bodies. In many texts on the Middle Ages, women and the demonic go hand in hand, for example seen again in Caciola’s Discerning Spirits, where women are constantly being labeled as being porous, open and being more susceptible to spiritual impressions, while men are described as dense, compact, and sealed. I will argue the constant theme shown throughout the Middle Ages of women’s bodies being described as being porous, and impressionable and its direct relationship with the demonic.

Title: Efficacy of TAVR in Intermediate and High Risk Patients with Severe Aortic Stenosis as Determined after 30-day and One Year Followups
Name: Zaydi Javeed
Mentor(s): Lindy Davidson
Program: Biomedical Sciences
Abstract: Transcatheter aortic valve replacement (TAVR) is still a very much developing procedure. The PARTNER trials have shown that TAVR produces lower mortality rate and cardiac symptoms than surgical aortic valve replacement (SAVR), true in both high and intermediate risk patients. The primary focus of this project is to evaluate the efficacy of TAVR in intermediate and high risk patients with severe aortic stenosis as determined after 30-day and one year followups. A database has been compiled from intermediate to high risk patients at a single research clinic that covers several TAVR procedures between 2015 and 2016. Factors such as aortic valve area (AVA) and mean gradient will be compared before surgery, after 30 days, and again after one year with the use of echocardiograms and a 5 meter walk test (5MWT). Improvement or worsening of any given factor will be found as the median of the percent changes in each of the patients. This will give a good indication of how effective TAVR is in the short and long terms. Results will hopefully show increased efficacy and this would be evident in increased AVA, increased stroke volume index (SVI), shorter 5MWT time, lower aortic maximum velocity (Vmax) and lower mean gradients. Mortality rate will also be calculated. These results can be compared to data from previous studies to show if the field is continuing to make advances. Future studies can be done to discover the efficacy of TAVR on low risk patients and even to compare different valve types.

Title: Effects of Delay to Reinforcement on Selections for High-Tech and Low-Tech Leisure Items
Name: Karie John
Mentor(s): Sarah Bloom
Program: Behavioral Healthcare
Abstract: Technology based leisure items such as television, tablets, and smartphones are widely used to entertain children daily. Overuse of technology-based toys may lead to health issues including obesity, attention deficits, and sleep disorders. Research has shown that parameters of reinforcement, such as quality, magnitude, and delay, may influence how children allocate their
choices. One way to drive choice away from high-tech toys may be to arrange delays to reinforcement following such selections and immediate reinforcement for an alternative response. Kim, Bloom, and Samaha (2016) found that children’s preference could be shifted using such an approach. The current study replicates those findings with individuals diagnosed with intellectual disabilities and uses a rapid assessment approach to determine therapeutic delays (i.e., delays necessary to switch preference away from high-tech toys). Results suggest that individuals with an intellectual disability are more likely to make a low-tech toy selection when access is granted immediately as opposed to a high-tech selection when the therapeutic delay is implemented.

Title: Impact of HDAC11 on Gene Expression Profiles in Melanoma
Name: Evan Johnson
Mentor(s): Kenneth Wright
Program: Biomedical Sciences

Abstract: Acetylation occurs when an acetyl group is added to a lysine residue. Enzymatic acetylation occurs by lysine acetyltransferases (KATs), and deacetylation occurs by histone deacetylases (HDACs). This process commonly occurs in histone proteins within the chromatin of cells. When the HDACs deacetylate the chromatin, the region becomes condensed and transcription is inhibited. These HDACs have been shown to be highly expressed in many cancer types. This association presents these proteins as a target of interest in cancer therapy. Melanoma, the most severe form of skin cancer, is a cancer type of interest. It was postulated that knocking down a specific HDAC (HDAC11) may elucidate its regulatory role, further characterizing it as a drug target. We aimed to create two WM983 (Melanoma) cell lines containing shRNA knockdown (KD) constructs via a lentiviral vector. The constructs were Isopropyl β-D-1-thiogalactopyranoside (IPTG) inducible. To confirm the KD of the HDAC11 gene, the total RNA was isolated at various time points, converted to complementary DNA (cDNA), and analyzed via real-time PCR. As a result, the cell lines containing the KD constructs were successfully developed. Additionally, the KD was proven successful in a series of experimental replications. The total RNA was submitted for RNA sequencing (RNA-Seq) to elucidate the downstream genetic effects of this HDAC11 KD. The gene expression profiling results, detailing the downstream effectors, will be presented. These results will shed light on the regulatory role of HDAC11 in Melanoma. HDAC11-specific inhibitors can be developed to target cancer types with a similar expression pattern.

Title: Frequency of Whole-Breast Radiation Therapy Following Intraoperative Radiation Therapy Due to Criteria Identified by Lumpectomy
Name: Luis Joya
Mentor(s): Roberto Diaz
Program: Biomedical Sciences

Abstract: 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 0e1 “cautionary” and no “unsuitable” criteria before lumpectomy. WBRT was recommended after IORT when 2p cautionary and/or 1p unsuitable criteria were met after accounting for resection pathology. We recalculated WBRT recommendation rates using initial and reresection margins for ASTRO consensus, Groupe Europeen de CurieetherapieEuropean Society for Therapeutic Radiology and Oncology recommendations, and TARGeded Intraoperative radioTherapy vs. Postoperative Radiotherapy trial “prepathology” stratum protocol.

RESULTS: Depending on the selection criteria chosen, rates of WBRT recommendation can vary from 4.5% to 33%. CONCLUSIONS: Alternatively, allowing for re-excision to clear margins and accepting one ASTRO cautionary factor lowered the rate of WBRT.

**Title:** Investigation of Structured Beam Propagation through Atmospheric Turbulence  
**Name:** Brian Kantor, Carlton Drew  
**Mentor(s):** Zhimin Shi  
**Program:** Physics

Abstract: Atmospheric turbulence imposes critical challenges for free-space optical applications, including communication, imaging and sensing. In this work, we study both numerically and experimentally the propagation of structured beams through turbulent atmosphere. Here, structured beams are beams of light with nonuniform transverse profiles of both complex amplitude and polarization. Our goal is to explore how information carried by light can be better reserved through turbid atmosphere. We start by setting up a numerical model of light propagating through turbid media, which is modeled as distributed random phase screens using von Karman model. Our numerical simulations confirms with common conclusion that the scintillation of a beam, defined based on the power within certain central area, would deteriorate significantly as the turbulence becomes stronger. However, our investigation reveals that the transverse amplitude profile and the polarization profile of a structured beam are affected by turbulence very differently. Contrast to the breakup of the complex amplitude profile of the beam, the polarization structures are maintained much better even through strong turbulence. We also performed preliminary experimental investigation. We used spatial light modulators to create desired structured beams, and used a heat gun to produce turbid air. A polarization-resolving camera is used to measure both the intensity and the polarization profile of the beams simultaneously. The experimental results are consistent with our numerical conclusions, which is leading to a new type of adaptive-optics-free information encoding protocol for free-space communication. Our study can also offer new insights for other applications through turbid media such as imaging.

**Title:** Conversion of Biogas to Liquid Hydrocarbon Fuels through Tri-Reforming and Fischer-Tropsch Synthesis  
**Name:** Matthew Kastelic  
**Mentor(s):** Babu Joseph, John Kuhn  
**Program:** Chemical Engineering
Abstract: As our planet continues to be plagued by environmental problems and depleting fuel reserves it is becoming increasingly more important to find fuels that are produced from renewable resources, such as biomass. Biogas derived from landfills or anaerobic digestion could be an answer, providing an almost carbon-neutral energy resource. One way to accomplish this is through the upgrading of waste derived biogas by coupling tri-reforming and Fischer-Tropsch synthesis (FTS). This research aims to determine the effectiveness and hydrocarbon yield of this process using a NiMgCe0.6Zr0.4O2Al2O3 tri-reforming catalyst at different steam concentrations and a CoSiO2 FTS catalyst at varying reaction temperatures to determine optimal conditions. All experiments were completed on a lab scale reactor and catalysts were characterized through a variety of methods. Results were analyzed using both gas chromatography – mass spectroscopy (GC-MS) and mass spectroscopy (MS). Tri-Reforming of biogas was done at 1 bar; methane and carbon dioxide conversions along with the hydrogen to carbon monoxide molar ratio were measured. Fischer-Tropsch synthesis was carried out at 20 bar; carbon monoxide and hydrogen conversions were measured and ultimately the overall yield of liquid hydrocarbon fuels was determined. We find that with greater concentrations of steam, the hydrogen to carbon monoxide molar ratio increases while carbon dioxide conversion decreases and the FTS catalyst shows a high yield of hydrocarbon fuels. This research shows that these catalysts have the potential to be used on the commercial scale in the production of hydrocarbon fuels from landfill-derived biogas.

Title: The Role of Cofilin in Tauopathies
Name: Teresa Kee
Mentor(s): David Kang, Alexa Woo
Program: Cell and Molecular Biology

Title: Identity and Rehabilitation Through the Creative Arts in Juvenile Detention Centers
Name: Elizabeth Keel
Mentor(s): Lisa Piazza
Program: Bachelor of Fine Arts - Studio Painting
Abstract: Creative arts programs and art education in the juvenile detention system provide solutions for many of the issues effecting incarcerated youth as well as opportunities to use the creative process as an outlet and tool for personal development. Strength-based art programs show measurable effects of increased self-awareness, reductions in aggression, development of healthy coping skills, improved interpersonal relationships, and providing insight into their experiences and development healthy social responsibility. The purpose of this research is to develop structural studio art sessions within an art education program to explore lived experience and concepts of identity through demystifying portraiture and facilitating drawing techniques in a juvenile detention facility. This research is conducted by examining existing programs that have been applied to juvenile detention centers and identifying artistic processes that have had success in addressing issues relating to youth incarceration, identity, and social justice. It also incorporates information about childhood development as well as challenges with learning and emotional disabilities among these populations. By providing art education in a positive environment with the application of studio practices, this ongoing research intends to engage students in critical awareness of themselves and the world and to encourage independent reflection through the visual
arts, collaboration, and journaling. By engaging in this process they will have improved quality of life while incarcerated and be more aware of their social responsibility in a positive psychology environment once released. This developed lesson will provide opportunities for other artists and professionals working in the arts in rehabilitation and other settings.

Title: Effect of Ketone Infusion in the Brain in a Mouse Model of Alzheimer’s Disease
Name: Anisha Kesarwani
Mentor(s): Marcia Gordon, Aurelie Joly-Amado
Program: Biomedical Sciences
Abstract: Metabolic dysfunction is one of many possible causes of Alzheimer’s disease (AD). The brains of AD patients often present with an insufficient glucose uptake, resulting in hypometabolism. However, the brain then uses an alternative fuel source, ketone bodies, for metabolism. Ketone bodies consist of acetoacetate, beta-hydroxybutyrate (BHB), acetone. Since past literature has suggested that ketones alter brain metabolism by reducing neuropathology, we hypothesize that the brain administration of BHB will improve cognitive outcomes and reduce pathology. In this study, we investigated the effects of BHB on cognition and pathology in a mouse model of amyloid deposition. Nineteen-month-old APP and non-transgenic mice were infused for 28 days with either BHB or saline. Behavior testing was performed fourteen days after surgery and tissue was collected 28 days after surgery. Behavioral analysis revealed a genotype effect, but no treatment effect as the APP mice showed increased locomotor activity in open field and Y maze. Mice infused with BHB had a slight improvement in motor performance during the Rotarod testing, but no improvements were seen in memory and learning. Immunohistochemistry revealed no significant difference in the Aβ and amyloid plaque deposition of the APP mice infused with saline or BHB. However, APP and non-transgenic mice infused with BHB displayed an increase in the Glut-1 area ratio in the cortex. These results suggest that BHB was infused into the brain of all mice. In addition, BHB infusion in APP mice improved motor performance, but there are no effects on cognition and pathology.

Title: Heigh Ho to Let it Go
Name: Hayley Kessler, Breanna Dennes
Mentor(s): Milton Wendland
Program: Health Sciences
Abstract: The purpose of this research is to compare the gender roles of princesses and princes in nine Walt Disney Pictures animated films (Snow White and the Seven Dwarves, Cinderella, Sleeping Beauty, The Little Mermaid, Aladdin, Mulan, Princess and the Frog, Tangled, Frozen). Prior research has shown that gender roles have changed over time, particularly the princess’ gender roles (England, 2011). However, current literature did not include films released after 2010, and no previous studies coded for the behaviors of villains, or considered how the gendered actions of films’ antagonists could play a role in enforcing “acceptable” gendered behaviors. The study hypothesizes that through the years, the princesses will become better-rounded characters, showing more balance in the masculine and feminine roles that they portray. There will be a change in the stereotypically male roles and characteristics expressed by the princes in comparison to the original films, but the princes will still exhibit more masculine characteristics than feminine characteristics. For the villains examined, they will display gendered characteristics that deviate from the expected
behaviors of their assigned gender. The princesses were overwhelmingly feminine, but as time went on, the masculine characteristic scores grew for each princess. The princes were masculine the majority of the time, however, as the research moved into the more modern movies, the scores of the princes’ feminine characteristics rose. In every case except for one (Shan Yu from Mulan) the research showed that antagonists digressed from behaviors considered “acceptable” for their assigned gender.

**Title:** Bias in Medicine: A Survey of Student Attitudes towards HIV-Positive and Marginalized Patients  
**Name:** Hayley Kessler  
**Mentor(s):** Steven Surrency, Yagmur Seven  
**Program:** Health Sciences, Communication Sciences and Disorders  
Abstract: Since the discovery of HIV in 1983, treatment of this disease has been a source of uncertainty throughout the medical community. In fact, Bikmukhametov et al. (2010) asserts that medical students display negative attitudes towards people living with HIV. This presents a significant dilemma, as providers’ negative dispositions can severely impede the quality of care that marginalized groups receive, as well as outcomes for these individuals. This research replicates a 2010 study conducted in Russia that measured the prevalence of medical students’ prejudicial attitudes towards HIV-positive and HIV-negative patients. The goal is to determine the prevalence of prejudices towards HIV-positive and HIV-negative marginalized groups, as well as to observe how these prejudices change as a student progresses in his or her medical training. It is expected that undergraduate students will display significant prejudices towards marginalized and HIV-positive groups, and that these prejudices will be decreased among a population of students studying medicine. The conclusions of this research will help educators and medical students alike by bringing about awareness regarding the incidence of conscious and unconscious reluctance to provide care, and improve healthcare providers’ level of self-awareness so that they are able to provide these individuals with the best possible care.

**Title:** Analysis of the Conflict Between the Al-Andalus Muslim and Jewish Communities and the Christian Contribution to Religious Bias  
**Name:** Zaheera Khaleel  
**Mentor(s):** Michael Heyes  
**Program:** Biomedical Sciences  
Abstract: During the 11th and 12th centuries, Al-Andalus was a Muslim-ruled Spanish territory occupied by Muslims, Jews, and Christians. The Muslim and Jewish communities were involved in a seemingly-harmonious-yet-discordant relationship with each other. Some historians suggest that it was the threat of norm-deviance or the need for dominance of the Muslims towards the Jews that caused the Jews to suffer under Muslim rule, while others suggest a general theological indifference of the Muslims towards the Jews and that any hostility resulted from normal communal interaction. The significance of the relationship between these two groups stems from a long history of anti-Semitism and Islamophobia, which exists even today, directed towards each other and by other religious groups. My research proposes another theory for the conflict between Jewish and Muslim communities. Specifically, I will argue that the negative interaction between the Al-Andalus Muslim and Jews initially stemmed from minor communal issues that were made
more significant, and introduced more serious disagreements, when both religious groups faced the larger Christian threat. It was the demonic picture painted by the Christians of both religions, as well as the fear of the Christians, that had metamorphosed over those centuries into a religious bias between the Muslims and Jews, with their differences playing an indirect role. The same Christian threat is responsible for the negative connotation towards Muslims and Jews, whose evidence is still present today, and plays a role in the development of anti-Semitism and Islamophobia during the Middle Ages.

Title: Comparing Gesture Use between English and Urdu Speakers
Name: Zahraa Khan
Mentor(s): Steven Surrency
Program: Communication Sciences and Disorders
Abstract: While there is evidence of some seminal work in the field of gesture in the early 20th century. (Efron, D., 1941), linguists have only begin a thorough investigation of the topic (e.g McNeill, D, 2000). In particular, numerous researchers are considering how cultural and linguistic differences affect human co-articulatory gestures (Haviland, J). Şeyda Özçalişkan conducted a study in 2016 which assessed gestures in bilingual individuals who spoke Turkish and English. While this study did suggest differences in gestural use between the two languages, it considered a single culture. This study would not be useful when assessing other languages, such as Urdu, due to cultural differences. The purpose of my project is to determine whether differences in culture and language affect the way English and Urdu speakers use physical/hand gesture during conversational speech. I collected data from YouTube videos of individuals speaking either English or Urdu in television talk shows to assess their conversational co-speech gestural use. I found that there was a significant difference between gestural use of Urdu and English speakers as well as differences in how the genders used gestures. I found that Urdu speakers made up 54% of the participants who used pointing gestures and English Speakers made up 71% of the participants who used emphasis gestures. Further research could especially be helpful in to access gestural use across linguistic and cultural groups.

Title: Caffeine Synergizes with Components from Coffee to Provide Cognitive Benefits against Alzheimer’s Disease
Name: Umer Khan
Mentor(s): Chuanhai Cao
Program: Biomedical Sciences
Abstract: Alzheimer’s disease (AD) a progressive neurodegenerative disease that destroys memory and other important mental functions. More than 5 million Americans are living with AD. This number is expected to drastically increase as the baby boomer population transitions into the late-adulthood age group. Currently, the treatment for AD includes FDA drugs that focus on treating the symptoms. These types of drugs lose their efficacy as the disease progresses. Therefore, preventive measures are very critical in decreasing the incidence rate of AD. Many epidemiological studies have been conducted on the treatment of Alzheimer's that suggest enhanced coffee/caffeine intake during aging reduces the risk of AD. This aim of this study is to demonstrates that long term coffee/caffeine administration in AD transgenic mice protects against cognitive impairment by reducing brain beta-amyloid levels through inhibition of both beta and
gamma secretase. In both APPsw+PS1 transgenic mice and non-transgenic littermates, acute I.p. treatment with caffeinated coffee effectively increased plasma levels of granulocyte-colony stimulating factor (GCSF), IL-10, and IL-6. These results were not observed when treated with caffeine alone or decaffeinated coffee, indicating that caffeine synergized with some unidentified component of coffee to elevate these 3 plasma cytokines. The increase in GCSF is significant because long-term treatment with caffeinated coffee enhanced working memory in a manner that was associated only with increased plasma GCSF levels among all cytokines. This study concludes that coffee maybe the best source of caffeine to protect against AD because of the synergetic that result in therapeutic actions against AD.

**Title: Service Learning Narratives of Honors Students Working in the Dominican Republic**

**Name:** Ar-Rafio Khan, Ashley Elliott, Lindsey Hawkins, Nathan Le, Cassandra Ly, Vivekka Suppiah

**Mentor(s):** Lindy Davidson

**Program:** Biomedical Sciences

**Abstract:** Experiences have a profound effect on the human psyche because they shape a person’s perspectives of the world. In order to understand the world of disability, it is essential that the individuals involved in the discourse comprehend the obstacles encountered by people with disabilities through shared experiences. This research project was constructed to build narratives between the disenfranchised disabled of the Dominican Republic and students from the Honors College of the University of South Florida. After completing a Geo-perspectives course on how people with disabilities are treated across various cultures, six Honors College students embarked on a medical service trip to the Dominican Republic to witness first-hand what the living conditions for the disabled people were like in the country. This research project focused on the change in perspectives of the six students participating in the trip from what they believed the lifestyles of the disabled people in the Dominican Republic were like from their readings to what they saw in communities like the bateyes of rural Dominican Republic. As a result, these students were able to better comprehend the life of a disabled person living in the Dominican Republic where social resources are spent on survival rather than the enfranchisement of the disenfranchised. Thus, through narratives obtained and the knowledge gained from the trip, the students were able to appreciate the value of service learning. Experiencing this style of learning in this dynamic environment further enhanced their understanding of living conditions outside the US and the challenges facing persons with disabilities.

**Title: Pantone Color Matching for Art Research**

**Name:** Jennifer Kilburn

**Mentor(s):** Ezra Johnson

**Program:** Studio Art

**Abstract:** The Pantone color matching system is used by digital artists to assign a number to every color in the spectrum in order to communicate about and reproduce artwork to exact specifications. Students of the studio arts are often asked to study works of art and discuss the artist's use of color, but the reference materials aren't held to any standards or specifications in their reproduction of the work. In order to really see a work of art one must travel, and often that's not possible on a student's budget. So there lies a problem in studying art that the student cannot
actually see. My research took place in Paris, where I used the Pantone color matching system to select most or all of the colors in a work of art in order to reproduce it accurately, or as accurately as I possibly could using screen printing. I matched colors in all the works that I knew as notable or important, and used that information to reproduce the work as specifically to how it appears in real life as I could. The intention of this project is to highlight how using the Pantone color matching system might benefit art education by creating a dialogue about the importance of color and truly looking and seeing the art that's being studied, and creating a higher standard of reproduced artwork that's used by higher education.

Title: New Data from Early Woodland Materials: Depot Creek Shell Mound, Northwest Florida
Name: Kaitlyn Kingsland
Mentor(s): Nancy White
Program: Anthropology
Abstract: The Depot Creek archaeological site (8Gu56), a prehistoric shell midden campsite in northwest Florida, was excavated in 1987 by USF, during which four test units were opened. Artifacts were collected, and catalogued using the standard paper methods of the time. Since the submission of the 1994 report to the National Oceanic and Atmospheric Administration, the site’s recovered artifacts have not been inventoried in an electronic database, re-bagged according to new state and federal standards, or studied in-depth. In this time, technology and techniques in archaeology have become more complex and demanding. The purpose of this research is to find the potential function and a more specific date for the site by analyzing the materials recovered from Test Unit B, and conserving the materials according to modern collections-management requirements for the benefit of future research of the site. It was expected, based on ceramics from the site that the occupation dated to sometime during the Early Woodland period—between 1000 B.C. and A.D. 300. Large amounts of charcoal recovered from the excavation were processed and a sample provided a radiocarbon date, for the assemblage recovered from this test unit dates to around 525 B.C. Careful identification and tabulation of artifact types helped provide a better understanding of cultural practices at this campsite. Identification of the faunal remains indicated that Rangia clams and turtle were predominantly harvested. Specific levels show cultural change through time and better documenting patterns in pottery and foodways of the area.

Title: Greeks Abroad
Name: Natalie Knowles
Mentor(s): Peter Stiling
Program: Cell and Molecular Biology
Abstract: Encouraging more students to study abroad has been a goal of the University of South Florida for several years. During a USF in London program, it was observed that a large proportion of the program consisted on Greek affiliated students. This study was performed to determine what is encouraging and discouraging Greek students in their decision to or to not study abroad. Two surveys were developed: one for students that plan to/have studied abroad and one for students that have not studied abroad. Each survey used a Likert scale ranging from Strongly Disagree to Strongly Agree to determine how strongly a participant related to a given statement. These were distributed to each sorority and fraternity through email. They were also shared through various
social media outlets. It was found that the leading factor encouraging students to study abroad was a desire to travel. Students were also looking to add to their resumes, make new friends, and develop culturally. The leading factor preventing participants from going abroad was finances. Fear of recent global events and limited classes for certain majors played a role in discouraging participants. Results from this study can help USF develop programs to appeal to a broader range of students. Members of Greek organizations can have a strong influence on their brothers and sisters. If these organizations are utilized when encouraging study abroad participation, the rates of students studying abroad could increase each year.

Title: Authority and Witnesses
Name: Valerie Kobzarenko
Mentor(s): Bryanna Fox
Program: Biomedical Sciences
Abstract: The purpose of this study is to investigate the effect apparent authority has on witness statements after a crime/event has occurred. Experiments in the field of criminology have shown the inaccuracy of witness statements as well as an effect of authority. This pretest, posttest study looked at the change in witness statements based on the perceived authority. Witness statements are still one of the most important aspects of a court case it is important to see if there is a degree of manipulation to these statements. A video was shown to participants consisting of a theft. After the video the participants were given a Form A, a multiple choice questionnaire regarding the video observed. Questions based entirely on observation were asked. A second, identical form.. The form was used as a baseline for comparison to their responses in Form A. More stress was placed on the idea of getting the answers right the second time. For Form B, the participants were allowed to interact with the members in their group. Various confederates were present for this part. Participants this time were exposed to a confederate which gave incorrect responses to certain questions. These participants had apparent authority as the presented themselves as graduate students, undergraduates or Ph.D students. It is expected that the authority figures will have a degree of effect on the number of wrong choices. Similar experiments can be conducted to see of authority applies to other fields such as pain management.

Title: Special Education in Palestine and Israel
Name: Widad Labban
Mentor(s): Lindy Davidson
Program: Biomedical Sciences
Abstract: Throughout recent years, the practice of inclusion in educational systems has been the mission for most relief organizations, NGOs, local schools and more. Society has seen a shift from opening segregated schools for children with disabilities to providing teachers with the necessary equipment and training to teach a diverse class. With this shift, it is important to note that there are still many factors involved that could hinder or enhance the quality of education provided to children with disabilities. From financial issues to infrastructure, special education around the world varies. Children with disability are often the most vulnerable and overlooked in most of society, especially in warn-torn or fragile states. Therefore, understanding the development of polices that may affect the quality of education they deserve will help ensure a positive change in their lives as well as the future of our generations. This research project intends to examine special
education in Israel and Palestine, two countries affected by conflict. By comparing and contrasting the special education in both regions in terms of quality, accessibility, affordability and range while also providing reasons to any conclusions, I am able to analyze the different viewpoints on special education, the various policies (or lack thereof) and the future of special education in the region. Preliminary findings show that Israel is at an advantage (financially and stability-wise) and implement special education policies that are relatively more progressive; however, development may still be needed in some areas.

Title: The Mistreatment of Persons with Disabilities in Ghana
Name: Ryan Lavorata
Mentor(s): Lindy Davidson
Program: Finance
Abstract: This research project looks into the discrimination and mistreatment towards persons with disabilities in West Africa (specifically Ghana). While most countries have laws that protect those with disabilities, Ghana is lax when it comes to the laws regarding persons with disabilities and that leads to mistreatment. With this project, I plan on learning about how and why persons with disabilities are mistreated in Ghana. For the project, scholarly articles and databases were used in order to conduct research. I plan on looking more into the databases and finding informational videos, articles, and pictures in order to give me more insight on the topic at hand. One question that will aid my research is whether or not Ghana’s laws protect persons with disabilities. Another one is if the abuse is directed toward a certain type of disability or all disabilities, and another one is who initiates the abuse towards persons with disabilities? The issue with the mistreatment of PWD’s in Ghana is relevant in contemporary society because disability is being more noticed across the globe.

Title: Medieval Women Mystics: Mediating Physical and Spiritual Space
Name: Jeanie LeGendre
Mentor(s): Michael Heyes
Program: Religious Studies
Abstract: Ritual worship involves sacralizing time to create “space” that worshippers enter to encounter the divine. The practice reflects a Jewish idea of shabbat as a sanctuary in time. For the Catholic Church, the idea manifests in Sundays set apart as “holiest” days and the symbolic “sign of the cross” that consecrates entry into prayer. While scholars study sacred time, not as many study the “space” sanctification creates—a place that provides an interface between humanity and divinity. Yet in the Middle Ages, women mystics traversed this interface to commune with God and then returned to relate the experience back to others. The relationship was one of reciprocity with society that not only defined sanctity, but also lent authority in a male-dominated world. Women mystics held a unique place within the Church; they were forced to reject traditional female roles yet expected to function as nurturers and intercessors for broader society in both the physical and spiritual worlds. Through an analysis of such vision literature as that of Catherine of Siena and Prous Boneta of Montpellier, this paper explores medieval mysticism from a spatial perspective in order to argue that the “space” these women occupied was not only a sacred place of inner personal experience but also one manifested in an outward public manner. Sacred space is crucial to understanding women within the Body of Christ and Communion of Saints—
foundational Christian ideas not readily understood in today’s secular world.

**Title:** Disability in Spirit Children in Ghana  
**Name:** Andrew Lent  
**Mentor(s):** Lindy Davidson  
**Program:** Statistics

Abstract: Disability, particularly in non-Western nations, is a topic that is rarely researched in Western literature. Because many of these governments present only certain facts and data, it is difficult to find accurate statistics on the population with disabilities in these countries. This creates a problem for aid organizations who are interested in bettering the lives of persons with disabilities (PWD), but cannot without a clear picture of the challenges that PWD face. Some interest has recently been taken in the state of PWD in Ghana, a nation on the West African coast. In Ghana, the concept of "spirit children" is crucial to understanding how the nation and its culture treat disability. Children that may be given this title include twins and those born with physical disabilities ("Spirit' children of Ghana," 2007). Looking solely at this one minority group can help researchers to understand how a large part of the Ghanaian population views disability. The aim of this research is to investigate the challenges that "spirit children" in Ghana face and to help propose ways in which the government can combat this issue. This research will be conducted through the use of pre-existing interviews with Ghanaians with disability, news articles, and academic journals. The research will also highlight the need for a culture centered approach to this disability issue. This will mean that further in-depth studies of the Ghanaian culture will need to be done in order to best implement ways of eradicating the concept of "spirit children" from Ghanaian society.

**Title:** Comparing and Competing: How Social Comparisons and Intrasexual Competition Contribute to Self Concept  
**Name:** Ryan Lerch, Emily Johnson  
**Mentor(s):** Brittany Lang  
**Program:** Psychology Philosophy

Abstract: Social comparisons are a well-established risk factor of lower self-esteem, body image disturbance, and disordered eating behaviors and primarily have been explored in the context of same-sex comparisons among women. Theoretical and empirical work in the realms of intrasexual competition suggests opposite-sex social comparisons also may impact self-esteem and body image among both males and females. There is a dearth of research exploring social comparisons among males and whether same- or opposite-sex comparisons may generate greater risk of poor self-concept and body image disturbance among young adult males. To that end, this study experimentally tested whether same- or opposite-gender comparisons better predicted changes in state self-esteem and body image and self-esteem. Participants included 189 heterosexual young adult men (age M = 19.4, SD = 1.51) who completed validated measures of state body image and self-esteem (pre- and post-stimuli), and provided basic demographics. Participants’ height and weight were measured to calculate body mass index (BMI). Participants were randomly assigned to view images of idealized men, women, or heteronormative couples and were asked to rate the images, as well as themselves compared to the images, on a variety of characteristics theorized to be associated with intrasexual competition, including attractiveness. Three multiple hierarchical
regressions were conducted to examine main effects of image ratings and self-image comparison ratings, as well as the interaction of these two types of ratings with experimental condition, predicted changes in state social and performance self-esteem, and state body image. Controlling for BMI, partnered status, and pre-exposure level, lower image rating and higher self-image rating were associated with greater social self-esteem (b= -.05, p = .013; b=.06, p = .001, respectively), while higher self-image rating was associated with greater body satisfaction (b = .04, p < .001). Neither image rating nor self-image comparison predicted performance self-esteem and condition did not emerge as a moderator in any analysis. Finding suggest that among heterosexual young adult men, the act of engaging in any social comparison, regardless of comparison target, impacts self-concept and body image. Prevention efforts may benefit from addressing social comparisons broadly.

**Title:** The Importance of Sports Teams to Their Communities  
**Name:** David Locht  
**Mentor(s):** Michelle Harrolle  
**Program:** Accounting  
**Abstract:** This research project looks to examine if a local sports team can use community initiatives to increase the sense of community for their city. This researched was constructed using qualitative methods, data was created through interviewing local fans of the Tampa Bay Lightning. The study found that success lead to greater social identity in fans and helped create intimate family relationships benefiting the Tampa community. Success also lead to a greater sense of community pride, the fans local sports team helped give their home an identity. The community initiatives of the Tampa Bay Lightning made them stand out and unite the community, Tampa is turning into America’s newest hockey town. The marketing and apparel that is associated with the Lightning also helped increase the identity felt by the fans, the more they witnessed their team the more they supported them. The findings really brought out the importance of what a sports teams relationship with their fans can be, sports can be used as a key tool in building and maintaining good community relationships.

**Title:** C-terminal truncated tau causes neurodegeneration of entorhinal cortex neurons, contributing to memory loss  
**Name:** Anjanet Loon  
**Mentor(s):** Maj-Linda Selenica  
**Program:** Biomedical Sciences  
**Abstract:** Neurofibrillary structures in Alzheimer’s disease (AD) are composed of mix of pathological tau including hyperphosphorylated, acetylated and caspase cleaved tau species. C-terminal caspase cleavage of tau has been shown to be closely associated with the conformational changes of tau observed in AD. We have successfully developed a mouse model utilizing the transduction of adeno-associated virus serotype 9 tau (AAV9-tau) vector, which allows for the enhanced expression and propagation of isoforms of tau protein over time. In this model, 8 and 16 month old mice were injected with empty capsid, full length tau (FL-tau) and C-terminal truncated tau (C-tau). We have previously demonstrated exacerbated FL- and C-tau accumulation and phosphorylation with age in mice independent of tau species. In this study, we sought to investigate in depth the effects of the FL- and C-tau on neurodegeneration in aged wild type mice. As a result
we observed regionally specific degeneration following FL- and C-tau expression, which was enhanced with age. The results highlight significant reductions in neuronal cell body density in the cortical layers, entorhinal cortex, subiculum and and hippocampus. Such information is supportive of a causal relationship between C-tau and behavioral decline followed by neurodegeneration in these mice, though the mechanism is still unknown.

**Title:** The Involvement of Lung Epithelial Cells Expressing Both Type II Alveolar Epithelial and Club Cell Markers in IPF

**Name:** Sanjay Mahendrasah  
**Mentor(s):** Jutaro Fukumoto  
**Program:** Biomedical Sciences  

Abstract: Idiopathic pulmonary fibrosis (IPF) is a chronic and progressive lung disease with no effective treatments available. The involvements of type II alveolar epithelial cells (AECs) have been extensively studied, and yet their precise role in IPF pathogenesis has not been clearly delineated. In our previous paper, we demonstrated that Cldn10 positive club cells with varied shapes and arrangements are widely distributed in IPF lungs. In the current study, we aim to investigate the presence of lung epithelial cells expressing both type II AEC and club cell markers based on our hypothesis that the club cell behavior in the context of lung regeneration is impaired in IPF. Human lung samples from patients with IPF were obtained from the Lung Tissue Research Consortium (LTRC) funded by the National Institutes of Health (NIH). Formalin-fixed paraffin-embedded (FFPE) lung tissue sections and cryosections were immunohistochemically double-labeled for pro-surfactant protein C (pro-SPC; type II AEC marker) and Claudin-10 (Cldn10; club cell marker). The colocalization of the two signals were examined under light microscope. A large portion of the epithelial cells lining small bronchioles in IPF lungs were labeled for both pro-SPC and Cldn10. Importantly, Cldn10-positive pro-SPC-negative cells were occasionally noted infiltrating fibrotic interstitium. These results suggest that a portion of Cldn10 positive cells are differentiating into type II AECs. Also these suggest that some club cells that do not possess type II AEC character play a certain role in IPF development.

**Title:** Timing of Locoregional Therapies and Recurrence of Hepatocellular Carcinoma: A New Metric to Consider  
**Name:** Alejandra Mallorga  
**Mentor(s):** Alexia Athienitis  
**Program:** Biomedical Sciences  

Abstract: Introduction: Policies in liver transplantation (LTx) for hepatocellular carcinoma (HCC) are controversial. Events affecting recurrence unfold before and during the wait list (WL). WL time in our center did not predict recurrence (ASTS Winter, 2016). We hypothesize that a long period from the last LRT to LTx event provides acceptable recurrence rates. Methods: Between 2002 and 2015, 170 LTx for HCC were performed (130 Path Stage A, BCLC). Tumor characteristics, demographics, and recurrence rates were recorded. Recurrences were captured for HCC never treated, treated, once, or multiple times, prior to LTx at 3 mo, 6 mo, or > 6 mo. from their last LRT to LTx. Logistic regression and chi square methodology was used. Results: Recurrence rates for all patients was 20/170 = 11.7%. For Stage A patients it was 12/128 = 9.3%. Patients without prior LRT treatments (n= 4/34) had an overall recurrence rate of 11.7%.
Recurrence for patients with LRT are depicted in Table. From last LRT to LTx, > 6 months provided low recurrence (8.7% overall, 4% for Stage A), significant for Stage A only. Conclusions: 1.) Six months from last LRT is sufficient to obtain low recurrence post LTx. Patients that have accrued this time period could be prioritized immediately and not 6 months from listing. This new metric should be studied further by OPTN regions and could replace the current controversial HCC policy.

Title: The Variability of Teachers' BRIEF-P Ratings of the Same Preschool Children's Executive Functions Displayed in their Classroom
Name: Raquel Manallich
Mentor(s): Darlene DeMarie, Jennifer Bugos
Program: Psychology
Abstract: Past research used the BRIEF-P measure to assess executive functioning of preschool children by having a teacher and/or parent complete the online, standardized questionnaire about children. Findings showed associations between executive functioning and academic outcomes (Allan & Lonigan, 2011; Blair & Razza, 2007; Fuhs et al., 2015; McClelland et al., 2007). Research also demonstrated the BRIEF-P had good internal consistency/convergent validity (Duku & Vaillancourt, 2014; Ezpeleta et al., 2015). However, it remained unclear whether there were differences between BRIEF-P informant ratings for the same child by different teachers. Pediatric neuropsychology experts (Sherman & Brooks, 2010) recommended using multiple ratings by the same type of provider to study interrater reliability. Teachers may have the tendency to exaggerate the differences among children (Spiegel, Lonigan, & Phillips, 2016). They might view the same behavior differently (Sherman & Brooks, 2010). Thus, we examined the consistency of teachers’ ratings of the same child. The 6 teachers with signed consent rated 32 children with signed parent consent. Teachers completed the BRIEF-P measure on the 3-to-5-year-olds one time. The significant correlations revealed that the two teachers in each classroom rated children five BRIEF-P factors similarly (i.e., all correlations were statistically significant). Although some clinical ratings differed on one or two particular factors, two teachers did not disagree on any factor ratings. Two teachers disagreed on ratings of 2 out of 6, and 2 teachers disagreed on 4 out of 9 children’s ratings for 1 factor. These results have serious implications, because they could result in discrepancies on whether a certain child is diagnosed for further educational assistance/support.

Title: Executive Functions in Early Childhood: Cognitive Constructs and the EF Touch Task
Name: Anxhelo Mara
Mentor(s): Jennifer Bugos, Darlene DeMarie
Program: Integrative Animal Biology
Abstract: Dissociating areas of executive function in young children is difficult due to overlapping constructs necessary to complete existing cognitive measures (Degé et al., 2011). Measures rely upon combinations of processing speed, memory performance, updating, planning, and inhibition. One measure that shows promise is the EF Touch Task as it attempts to dissociate intelligence from executive function. EF touch consists of seven tasks that represent three domains: inhibitory control, working memory, and attention shifting, claims to measure executive functions independently. The purpose of this research was to evaluate how typical preschool children (4-6 years) perform on the subtests of the EF Touch Task as well as the relationships between
performances on the EF Touch subtests the Peabody Picture Vocabulary Test. We recruited 44 children (25 male, 19 female). We found significant correlations between the following measures Farmer and Pig, and no significant correlations between vocabulary scores and those on the EF Touch task. This suggests that the EF Touch Task may measure separate constructs from estimated intelligence; however, some of the measures do significantly correlate to each other. The EF Touch Task may be a useful measure for areas of executive functions as it significantly differentiates between testing intelligence and executive function.

Title: Students with Disabilities in South Korea
Name: Nicole Marques
Mentor(s): Lindy Davidson
Program: Psychology
Abstract: In South Korea, conditions for persons with disabilities in general have only recently started improving, including the recent changes for students with disabilities specifically. They have been given easier access to resources such as consultations, screenings, therapy and the current attempt at establishing special schools for those students with more severe disabilities who were not allowed into mainstream schools. The aim of this paper is to determine what resources are available to students with disabilities in South Korea, as well as the barriers these students still face. This poster will look at research already in existence regarding the topic of students with disabilities in South Korea. What can be drawn up from existing literature shows that South Korea has only recently begun improving conditions for students with disabilities, so there are still more barriers than there are resources to help students. This is not to say that the situation for students with disability is a lost cause; the fact that the stigmas against disability are slowly being taken down and policies are being put in place shows the potential the country has for completely turning the situation around. Ideally, this information should be taken into account and other countries who have only recently begun trying to improve the situation for students with disabilities in their countries, and show them that there are still many issues going unresolved.

Title: An In-Depth Look at Patient Preference for Emergency Medical Care
Name: Alexis Marquess, Alexander Beard, Lucy Garner, Nina Hadzic, Danielle Melton, Stephanie Morris, Hussien Mohamed, Mery Yanez
Mentor(s): Roberta Baer
Program: Arts and Science and Public Health
Abstract: This exploratory study was designed to investigate the physician-patient interactions in emergency care settings. A particular focus was on the extent to which the ethnomedical perspectives of patients and providers differed. The analyses conducted offer suggestions for the improvement of the patient experience, for how similar projects can contribute to meaningful service-learning courses for pre-medical students, as well as for how emergency departments can benefit from collaborating with applied anthropologists. This project was conducted through the collaborative efforts of the researchers and students in the USF ANT 4495/IDH 4930 “Research in Physician-Patient Interactions” course, spring semester 2016. This pilot study focused on using anthropological concepts and qualitative methodologies in examining the patient experiences in the Emergency Department (ED) of Tampa General Hospital (TGH). Key informant interviews were conducted with patients at the emergency department of Tampa General Hospital (n=91).
This data was complemented with over 100 hours of participant observation with physicians and patients. It was found that patients are generally satisfied with the care provided at the TGH ED. Satisfaction was highest among Anglo-American patients and patients younger than 50 years of age. Patients generally understand why they are experiencing particular symptoms. Patient populations that are more likely to manage their symptoms at home were either females, ethnic minorities, or those older than 50 years of age. Patients of non-English speaking ethnic minorities are satisfied with the care provided, but would prefer having more translation services available to better understand the hospital staff’s questions, information and instructions.

**Title:** Binaural Audio Study  
**Name:** Marc Matza, Hunter Drake, Catherine Fortel, Wes McDuffie  
**Mentor(s):** Christina Salnaitis  
**Program:** Psychology  
**Abstract:** Binaural Audio (or “3D audio”) is a type of audio recording which is commonly purported to affect mood. The purpose of this study is to examine whether Binaural Audio will affect mood. Specifically, it is understood that exposure to certain kinds of audio can influence brain wave states (Delta, Theta) although the exact mechanisms are not well understood. In this study, participants are exposed to different audio samples with Binaural audio masked by pink noise and asked to answer questionnaires assessing mood and anxiety. Furthermore, participants are asked to take pre and post tests assessing cognition with a basic word pairing test. Finally, a manipulation check measuring mystical experiences is employed. Answers are examined along with live EEG data to assess brain wave states. This study aims to test the basic assumption that Binaural Audio is efficacious for affecting mood or cognition.

**Title:** Disability in Pakistan  
**Name:** Brianna McKown  
**Mentor(s):** Lindy Davidson  
**Program:** Marketing  
**Abstract:** The education system in Pakistan is lacking as more than half the population above age 15 are illiterate. Pakistan has set goals to improve educational institutions and put together a plan to improve the institutions. However, there are several factors that are preventing Pakistan from advancing on these goals, including social constraints, a gender gap, and a war on terror. For people with disabilities (PWD) in Pakistan, access to education is even more limited due to limited capacity in existing facilities, physical barriers, and social stigma. Many other countries share similar issues for PWD trying to access education. Through the use of secondary research, government provided statistics, and firsthand accounts of experiences in Pakistan, this research project addresses the question: how does the threat of terrorism impact the education system for PWD in Pakistan? Findings indicate that Pakistan has seen more attacks against educational targets than any other country. These attacks instill fear within the population and bring the Pakistani government's attention to focus on the war on terrorism. Since eliminating terrorism is the main focus of the Pakistani government, little attention is paid toward improving the educational system of PWD. Additionally, reforms and improvement of educational systems in Pakistan cannot be accomplished by the government alone. Public and private participation is the key to increasing the literacy rate of the population and increasing accessibility to education for PWD.
Title: Motivating Kindergarten Students in ELA
Name: Lindsay McTague
Mentor(s): Thea Saccasyn
Program: Elementary Education

Abstract: As a fulltime student-teacher in a kindergarten classroom, I found through observational data that many of my young students were off-task during ELA. My research question became, “How can I improve my classroom management strategies to most effectively motivate students to stay on task during ELA?” I selected 4-5 focus students that exhibited the most off-task behavior out of the 19 students in the class. I began collecting data by using tally charts to gauge the off-task behavior of these students. I then turned to empirical research to find ways to engage students during ELA activities. To learn more about my focus students’ attitudes about reading, I administered a modified version of the Elementary Reading Attitude Survey (ERAS). The data suggested that most of my focus students (4/5) liked to be asked questions about their reading. Based on this data, I implemented higher-order questioning techniques to engage students during read alouds and independent reading. Recording my read alouds periodically, I used V-Note coding software to code my lessons for levels of higher-order questions (based on Bloom’s Taxonomy), and for subsequent student behavior. Other motivational methods in this study include: implementing incentives for students during independent reading based on their reading stamina, and implementing mastery goals during writing to make writing objectives achievable. As I continue my inquiry, I expect to find that consistently engaging students in higher-order thinking will foster a culture wherein students will start tasks with the expectation of being engaged/on task.

Title: Montreal Cognitive Assessment Scores on Cancer Presence and Cognitive Aging: A Comparative Study
Name: Vincent Medina
Mentor(s): Ross Andel, Nasreen Sadeq
Program: Aging Sciences

Abstract: Cancer is a major health problem with consequences not only for mortality but also for cognition. The purpose of this project is to further this understanding by identifying relationships between cancer and cognitive ability. Cognition was assessed using Montreal Cognitive Assessment (MOCA) scores, while cancer data was collected using a health questionnaire that asked about cancer presence (yes/no) as well as cancer type. Participants were cognitively healthy older adults (age 55 years and older) with MOCA scores ≥25, no history of neurodegenerative disease, and training in self-administration of the Cogstate Brief Battery. Out of the 158 participants that completed the study, there were 68 occurrences of cancer. Skin cancer occurrences were considerably high, amounting to approximately half the cases overall (48.5%). Regarding MOCA scores, participants with cancer had a mean score of 26.7 with a standard deviation of 1.6. Participants without cancer had a mean score of 27.0 with a standard deviation of 1.7. There does not seem to be a significant difference in baseline MOCA scores between participants with cancer and participants without, as participants without cancer had a higher mean score by just 0.3 points. This suggests that cancer may not play a huge role in the cognitive abilities.
of healthy older adults.

**Title: Improving the Health and Well-Being of Students Through Mindfulness**
**Name:** Samira Meena  
**Mentor(s):** Jennifer Jacobs  
**Program:** Elementary Education

Abstract: My inquiry focuses on improving the health and well being of students through mindfulness. I was introduced to the idea of mindfulness at the University of South Florida in my "Introduction to Diversity" course, through which I had the opportunity to attend a "Mindfulness in Education" workshop, which gave me the right tools to research the concept of mindfulness more in-depth. Having worked as a camp counselor and having interned in elementary schools for the past few years, I noticed increased levels of anxiety and poor self-esteem among students both inside and outside of the classroom setting. Introducing the concepts of mindfulness and metacognition allows students to monitor how they are feeling and become more self-sufficient in their endeavors. Presenting these skills gives students helpful tools to lower their anxiety levels and to more effectively retain the information they are being taught or tested on. Previously, I worked with fifth graders who exhibited learned helplessness and I am currently working with third graders who portray some similar characteristics. My goal is for students to acquire a growth mindset as well as improve their skills in managing their stress and anxiety levels during test taking situations. In my inquiry thus far, I have learned the majority of coping mechanisms and strategies are intended for adults or adolescents rather than students at the elementary level. I have also learned the best strategies involve movement and are not related to the situation causing the stress.

**Title: The Effect Management Accounting Practices Have on Small Businesses’ Financial Success**
**Name:** Chandler Miller  
**Mentor(s):** Mark Mellon  
**Program:** Accounting

Abstract: One of the foremost and clear goals of any small business owner is to run a successful business, but making a small business successful, however, can be a very complicated and undefined task to achieve. This research study aims to identify if there is an association between the use of management accounting practices by small businesses and financial success. This study was conducted through the use of physical and electronic surveys that asked about small business management members demographic and financial information, as well as about their use of management accounting. The surveys were given to small business management members in the Central Florida area over the phone and through the USF Small Business Development Center (SBDC). After distributing the surveys, only ten fully-completed responses were received. After analyzing the data, it was concluded that a direct positive association between the use of management accounting practices by small businesses and financial success does not exist. Further investigations into this field should be made in order to obtain a more representative sample of the small business population and to see if the results of this study are duplicated.
Title: The Suffrage Postcard Project  
Name: Lea Minniear, Natalie Bohin, Michele True  
Mentor(s): Kristin Allukian  
Program: English/Literature  
Abstract: In 2017, we have Twitter, Instagram, and Snapchat; 100 years earlier, there were postcards. The Suffrage Postcard Project revisits the women’s suffrage movement of the 1900s, a movement that gained momentum in the same historical moment of the “Golden Age” of postcards. While scholars have discussed the structures of white heteronormative femininity and motherhood as important tropes in suffrage postcards, there is less scholarship on depictions of masculinity operated in suffrage postcards. By utilizing a range of digital tools including Omeka, ImagePlot, Gephi, Tableau Public, and Iconclass, we ask: how do feminist digital archiving practices engender new visual historical narratives of masculinity? Using, feminist digital archiving methodology, we tag the digital files with appropriate and nuanced word-tags so that researchers can populate effective search results. Because we use feminist theory to analyze the images, collaboration is key as multiple cultural viewpoints produce a more robust, dynamic database. Our results are twofold. First, early data visualization results using Imageplot have revealed the high degree to which representations of masculinity were central to the construction of pro- and anti-suffrage debates. Second, we have created a searchable digital archive of suffrage postcards for research and teaching purposes. Future research questions include: How did the political connections and financial investments of the print industry play a role in anti-suffrage postcard production? How were images of masculinity influenced by the onset of WWI? How was masculinity and manhood being depicted in the popular literature of the time?

Title: Exploring Structure and Inhibition of Specific Sulfhydryl-Variable β-Lactamase (SHV-2)  
Name: Sabbir Mirza  
Mentor(s): Yu Chen, Orville Pemberton  
Program: Biomedical Sciences  
Abstract: Antibiotics have played a large role throughout history in stopping bacterial infections from harming people. In the last century, a break-through class of antibiotics, known as β-lactams were discovered. This class of antibiotics contain a β-lactam ring, which is essential to their activity. However, only a few years after their conception, the effectiveness of these antibiotics began to decrease. This is because strains of bacteria appeared that developed resistance to the antibiotics by producing enzymes that hydrolyze the β-lactam ring and cleave the structure of the antibiotics. These enzymes are known as beta-lactamases. My research involves finding a compound that can inhibit these enzymes. Specifically, I have been researching the SHV-2 beta-lactamase, which is commonly produced by Klebsiella pneumoniae and Escherichia coli. The process used to discover an inhibitor is by protein crystallography, activity assays, and molecular docking. To crystallize SHV-2, a buffer solution and the protein must condense together overtime in an incubator. Different ratios and buffers are used to create optimal crystals. After many trials, I have crystallized SHV-2 well enough to produce a viable structure for molecular docking. My presentation at the colloquium would be about the structure of the protein, potential inhibitors tested through activity assays, and functional groups that can inhibit active sites on the protein which is determined via molecular docking. The implications for
this research would be creating stronger antibiotics that can help in the treatment of bacterial antibiotic resistance.

**Title:** Determination of the Existence of an Association between Depressive Symptoms and Performance on Cognitive Tests Administered via the Online CogState Brief Battery Test  
**Name:** Pamela Mishaw  
**Mentor(s):** Ross Andel, Nasreen Sadeq  
**Program:** Biomedical Sciences  
**Abstract:** The relationship between mental health and cognition has drawn a wide interest but the outcomes remain unclear. We assessed whether self-reported depressive symptoms may related to working memory and speed of processing—two cognitive areas particularly indicative of cognitive health. Cognitively high-functioning individuals aged 55+ were prescreened into a monthly cognitive monitoring program. A GDS Short Form was also administered during screening. Cognitive performance was measured with the web-based CogState Brief Battery, which measures working memory and speed of processing across four card sorting tasks—Detection, Identification, One Back, and One Card Learning. Out of 158 participants, most (69.4%) were women, with an average age of 74.5 years. The participants reported on average less than one depressive symptom (M = 0.84) in the past week. In the analysis of the individual GDS items, those who expressed memory concerns performed faster on Detection (p=.032), Identification (p=.036), and One Back (p=.041) tasks, but not on the most difficult task, One Card Learning. Those who reported less energy performed faster on Detection (p=.032), Identification, and One Back tasks (p= 0.049). In a sample of cognitively high-functioning individuals with relatively low depressive symptoms, those who still reported memory complaints or lack of energy might be more likely to be vigilant when completing cognitive tasks than those who feel more confident in their cognitive performance and those without reporting lack of energy. These possibly counterintuitive results provide important information for physicians working with cognitively healthy older adults.

**Title:** Preschool Children's Emotional Responses to Singing Task: A Comparison of Imitation and Improvisation  
**Name:** Natalie Molina  
**Mentor(s):** Jennifer Bugos  
**Program:** Biomedical Sciences  
**Abstract:** Improvisation in school-based music programs has been met with mixed reactions due to limited exposure in music educators, preservice teachers, and adolescent music students (Wehr-Flowers, 2006; Alexander, 2012). However, little is known about young children’s emotional responses to vocal improvisation in early childhood. The purpose of this research was to quantify facial affect associated with vocal imitation and improvisational singing tasks in pre-school children (4-6 years). Participants (N=44) were instructed to respond to stimuli from the Advanced Interdisciplinary Research in Singing Test of Singing Skills (AIRS-TBSS; Cohen, 2011). Responses to phrase imitation in a common folk song were quantified and compared to improvised musical responses using the Noldus FaceReader 7. Preliminary data suggest that for the imitated melody, surprise (M=34.61, SD=16.23), neutral (M=29.28, SD=14.83) and happy (M=15.90, SD=19.49) were the most frequent responses. For improvised melodic content, the most frequent responses included: surprise (M=36.97, SD=17.53), happy (M=20.48, SD=21.05) and neutral
Of the noteworthy findings to date, the improvised responses showed that young children demonstrated higher levels of scared ($M=8.82$, $SD=9.70$) and disgust ($M=3.75$, $SD=8.60$) compared to a lack of scared and disgust responses in imitated vocal melodies. Our data suggest that previous experience and context for musical imitation and improvisational tasks may influence emotional responses. Results also suggest that educators need to be cognizant of the emotional responses of young children to such tasks and create supportive learning environments.

**Title:** Speleothem Evidence For North Atlantic And Mediterranean Climate Influences In Northwestern Romania  
**Name:** Evan Moore  
**Mentor(s):** Bogdan Onac, Jonathan Wynn  
**Program:** Geology

Abstract: Oxygen and carbon stable isotope records of the eight-centimeter long SCS-7 stalagmite from northwest Romania provide a climatic record of MIS 6-5. U-series ages show discontinuous growth from $140 \pm 1.77$ ka to $134 \pm 2.08$ ka, and from $116 \pm 0.48$ ka to $110 \pm 0.49$ ka. A second hiatus occurs in the form of a thick clay band, after which a final growth period is recorded from $2.8 \pm 0.3$ ka until sampling in 1986. Eight new uranium/thorium ($U$/Th) dates by MC-ICP-MS confine these three distinct periods of carbonate deposition, and show all corrected ages are in stratigraphic order. Five $U$/Th dates constrain approximately 90% of the stalagmite growth from 140 to 110 ka. Stable isotope analysis was performed by micromilling along the axis of growth each 0.5 mm, producing 158 powdered samples. These powders were then dissolved in phosphoric acid at $25^\circ$C, alongside 75 calcium carbonate standards. The CO2 gas produced by the reaction was run through a Thermo Delta V isotope ratio mass spectrometer, within which $\delta^{18}O$ and $\delta^{13}C$ values were calculated to an accuracy of 0.12 and 0.09‰, respectively. Based on the modern hydroclimatic systems in northwestern Romania, it can be assumed that changes in the source of precipitation from either the Mediterranean or North Atlantic basins, and known variables such as continentality, temperature, and biological productivity, are the most significant contributors to variation of $\delta^{18}O$ and $\delta^{13}C$ values in the SCS-7 stalagmite.

**Title:** Food Policy Evaluative Tool Kit for Florida Food Council  
**Name:** Alexandria Moorehead  
**Mentor(s):** Joseph England  
**Program:** Environmental Science and Policy

Abstract: Food Policy Councils across the nation work alongside legislators and food system stakeholders to lobby and advise on practices and policies that are best for their particular regions. These councils broadly cover five main focus areas related to the local food system: production, consumption, processing, distribution, and waste recycling. Currently, Florida is making its second attempt at developing a Food Policy Council for the state. My research aims to create an evaluative tool kit specific to Florida to aid in benchmarking its formative process, up to implementation. This research employs the Community Coalition Action Theory, detailed in the Emerging Theories in Health Promotion Practice and Research by Ralph J. DiClemente, Richard A. Crosby, and Michelle C. Kegler. The Community Coalition Action Theory has created progress indicators for every step of the coalition formation, implementation, and institutionalization processes; focusing on the qualification and quantification of organization.
synergy and community impact. As a local example, Good Food Central Florida has utilized several tenets of this model to create an evaluative strategy that has shown success, but has yet to be scientifically tested. Central Florida’s work with this evaluative model will be incorporated with this research project’s analysis. In sum, this research intends to employ the CCAT model to create a usable evaluative tool to create benchmarks during the formation stage of the FL Food Policy Council.

Title: To Talk or Not to Talk: Does Humor Hold Your Attention?
Name: Camila Moraes, Michelle Meyers
Mentor(s): Elizabeth Schotter
Program: Psychology
Abstract: In today’s time, the dating world has changed to a new platform, online dating. The question that we are out to discover is what type of profiles are deemed more desirable. For this project, there will be four different profiles that participants will read. One that is short (ie. five sentences) and it has humor embedded in the profile, one profile that is short but no humor, one profile that is long (ie. fifteen sentences) with humor and finally another one that is long with no humor. This will allow us to see if people prefer a profile that gives a lot of information about the person or if they want a more direct to the point and if humor is as much of a desired trait in online dating as it is in face-to-face dating. These profiles will be generated in Qualtrics and participants will rate each profile on how desirable they find them. Our hypothesis is that the short funny will be the most desirable, followed by long funny, short unfunny and long unfunny. We are assuming that people will want something direct that makes them laugh. The overall conclusion will be that when people are making their new profiles on Tinder, eHarmony, etc. is that they will include some humor since it is a desirable trait but it will be short and to the point. Therefore when other users are viewing their profiles they get more matches because their profile reflects an ideal partner.

Title: German Welfare State
Name: Haley Morton, Muna Hobi, Jennifer Jost
Mentor(s): Peter Funke
Program: Behavioral Healthcare
Abstract: Germany’s welfare system has experienced several reforms recently that have changed the rhetoric around disabled people in welfare. This created a shift from a focus on “welfare” for disabled people to “participation” in society, while combining the welfare and long-term unemployment systems. In exploring this information, we are asking how the availability of disability benefits offered in Germany affect enrollment of disabled persons in welfare benefits, our goal being to evaluate whether these reforms succeeded in offering services to disabled people. Our hypothesis was that these reforms were not conducive to fostering integration into the system. We are exploring this by creating a comparative analysis of how this change in focus in German welfare affects the enrollment number, pre and post reform. The scope of disability benefits will be evaluated and presented through the compilation of information from books and online sources. Some of our sources include articles from the Journal of Social Policy (Equal Rights and Equal Duties?), the Social Security Office of Policy (SS Programs throughout the world), Internations.org (Social Security in Germany) and pitt.edu (Country Case Studies and Links:
Germany). Graphs and tables were our main medium for compiling data. Through these methods, we found that the social codes did not have a significant impact on increasing the enrollment numbers for Welfare in Germany. This result opens the door for future research comparing the welfare systems of the United States, as another world power, with Germany to further investigate the real culprit of this inadequacy of reform.

**Title:** The Effect of Language Similarity on Inhibition During Language Switching  
**Name:** Serene Mostafa  
**Mentor(s):** Mark Lowry, Judith Bryant  
**Program:** Biomedical Sciences  
**Abstract:** With more multicultural environments there is a growing population of multilingual speakers. An important mechanism to describe language switching is the inhibitory control model, which claims that before speaking, both languages in a bilingual are activated. The selected language remains activated while the nonselected language is inhibited. Previous studies have shown that balanced bilinguals exhibit equal amounts of inhibition when responding in either language. This experiment focused on comparing language inhibition in balanced English-Arabic bilinguals and English-Spanish bilinguals. English and Arabic come from different language families, whereas English and Spanish come from the same family. This language similarity suggests that there would be greater inhibition required for English-Arabic speakers than for English-Spanish speakers. In order to measure language inhibition, participants were asked to respond to an executive control distractor task then name a picture in either the primary (L1) or secondary language (L2). This inhibition was measured as reaction time, or how long it takes the individual to begin responding. There were two types of trials: switch (respond in a different language) and non-switch (continue to respond in same language). An executive control task was introduced to further elucidate the relationship between inhibition and the languages. For English-Arabic bilinguals, a long reaction time while switching from L2 to L1 is expected due to the distance between the two languages. For English-Spanish bilinguals, a short reaction time while switching from L2 to L1 is expected due to the similarity between languages.

**Title:** The Short Term Effects of VTS Facilitation on Self-Esteem  
**Name:** Somiyah Mughni, Mario Cardenas Gomez, Manar Tarabzouni  
**Mentor(s):** Catherine Wilkins  
**Program:** Biomedical Sciences  
**Abstract:** Art therapy has become a popular topic in the field of mental health treatment. One of these methods of art therapy is Visual Thinking Strategies or VTS. Literature has shown that VTS can be particularly beneficial to people dealing with a broad range of mental health issues, including depression, PTSD, and dementia. It has also shown to be helpful in promoting social interactions and increasing communication skills among students. However, there is very little research on the effects for the actual facilitators who perform VTS. Investigating this particular aspect of VTS could further encourage the use of VTS in the community. We are specifically looking into how VTS affects the self-esteem of the facilitator in the short term. We will use the Rosenberg self-esteem scale measured immediately before and after the facilitators carry out a session of VTS. Since our results are quantitative, we will run statistical analyses using the ANOVA software to determine the significance of our findings. We expect that our findings will
indicate that there is a positive effect on the self-esteem of the facilitators. This study would shed more light on the effects of VTS on facilitators. Future research could investigate other specific capacities that could be improved by performing VTS such as critical thinking, empathy and listening skills.

**Title:** VTS at USF  
**Name:** Sara Mustafa, Erinda Kostandini, Neva Patil, Heather Prince, Rafikiel Seyvunde, Prachi Singh  
**Mentor(s):** Catherine Wilkins  
**Program:** Biomedical Sciences

Abstract: The Visual Thinking Strategies (VTS) method encourages facilitator-participant conversation regarding art, while improving communication skills, critical thinking, and visual literacy in participants of all ages. VTS is generally used in museums as art therapy for individuals with various mental illnesses and their caretakers. According to Camic et. al., art therapy has shown to improve communication skills, alleviate symptoms of depression, and improve cognitive skills in patients with dementia but has shown to be influential in the lives of all individuals from every background. Hence, we aim to understand in what ways can VTS supplement the curriculum at the USF Counseling Center by offering alternative ways to improve mental wellness and academic success in students. To study this, literature reviews will be used to create a proposal for the Counseling Center to demonstrate the benefits of VTS for students. Furthermore, surveys will be distributed to gauge student interest about the VTS method. We will work with staff and directors of the counseling center to determine how to implement VTS. It is expected that the research will demonstrate that students are interested in VTS and directors of the Counseling Center will find VTS to be a valuable inclusion in their programing. This project will provide a foundation for potential future research on assessing how beneficial the VTS was on campus for students and creating a curriculum to teach future facilitators at USF counseling center.

**Title:** Songwriting: How We Will Rewrite the Future of Music Education  
**Name:** Christopher Namislo, Louis Greto  
**Mentor(s):** Clint Randles  
**Program:** BS. Music Education

Abstract: In the field of music education in the United States, there are practices that have been more highly regarded over time than others, since the beginning of compulsory school music education that started with Lowell Mason in Boston, MA, in the 1830s (Mark & Gary, 2007). These practices have often included most notably band, choir, and orchestra with little focus on any musical pursuit that was not a part of the core ensemble. These large-ensemble musical offerings where a single teacher serves as the conductor and director of their students has been the bedrock of school music education since its inception. Researchers and practitioners from around the globe are now working to understand how popular musicians learn (Green, 2002), and are using those understandings to build music education curricular offerings that incorporate opportunities to make music the way that musicians do in the real world (Green, 2008). Imploring students to explore music as it exists in the world, not as it currently exists in schools (Kratus, 2007) is paramount in creating lifelong appreciators of the arts. This action research project (Stringer, 2014) examines lyric writing through the use of an auto-ethnographical lens, the personal
experiences of undergraduate music majors in USF’s innovative music education program that embraces and furthers the work of scholars and researchers in this area (Williams & Randles, 2017; Randles, in press). Results suggest that lyric writing can be useful in the lives of future music teachers as a means by which to grow their own personal musicianship, with the end goal of using songwriting to stimulate the musicianship of our students. Researchers and practitioners in this area might examine the impact of lyric writing in the lives of K-12 students, given the growth of “modern band” as a curricular offering (Randles, Dröe & Goldberg, in press).

**Title: VTS in the Academic Setting**

**Name:** Kunal Narwal, Mikaela Massey, Laura McKnight, Hannah Patrick  
**Mentor(s):** Catherine Wilkins  
**Program:** Biomedical Sciences  

**Abstract:** Visual Thinking Strategies (VTS) is a program that is used to enhance communication and observational skills in a safe environment through individual interpretation of art. Studies have shown that VTS is an effective learning strategy in the classroom when implemented prior to class material. The goal of our study is to revise the standard VTS method in the educational setting to improve learning comprehension, communication, and listening skills. We hope to review the literature of past VTS trials in the classroom, refine the process, and encourage the use of VTS in educational settings. We will develop a plan that incorporates VTS into history and biology curriculum, and present this to local elementary schools as well as the Tampa Museum of Art, the Glazer Children’s Museum, and the Holocaust Museum. Our goal with this study is to develop a feasible curriculum to be used in educational settings with students that amends past issues that have been observed with VTS, and encourage educators to utilize this curriculum in the future. This exploratory research could provide the platform from which future studies could be conducted regarding the incorporation of VTS into educational opportunities into museums, schools, and youth community outreach programs.

---

**Title: The Effects of an Intensive Piano Training Program on Processing Speed in Adults with Parkinson’s Disease**

**Name:** Shafa Nathani, Patricia Rodriguez  
**Mentor(s):** Jennifer Bugos  
**Program:** Cell & Molecular Biology  

**Abstract:** This research investigated the effects of an intensive piano training program on processing speed in adults with Parkinson’s disease. Musical experiences are an ideal source of practice for improving attention (Lesiuk, 2014), executive function (Bugos, 2007), and state-mood (Lesiuk, 2015). Intense piano programs have the capacity to improve cognition and psychosocial performance in healthy older adults (Bugos & Kochar, 2015). Twenty-seven participants with a diagnosis of Parkinson’s disease, native English speakers, less than five years of musical training, and not currently performing or reading music, were assigned to piano training or a waitlist control group. Adults completed standardized cognitive measures pre and post- 10 days of intensive group piano training (3 hours per day). The “piano boot-camp,” consisted of instruction on five-finger movement patterns, piano repertoire, and music theory. Results of a MANOVA for processing speed show significantly enhanced performance for the piano group on the Paced Auditory Serial Addition Task (PASAT), post-training, F(1,25)= 6.73, p=.016, compared to controls. This
preliminary data suggests that piano training may have the capacity to assist auditory processing speed in adults with Parkinson’s disease. Further experimental research is necessary to determine if piano training can mitigate cognitive decline in adults with PD.

**Title: The Syrian Crisis and German National Identity**

**Name:** Cooper Neal, Casey Farrell, Tiffany Hammond, Yue Zhang  
**Mentor(s):** Peter Funke  
**Program:** Electrical Engineering

Abstract: With the rise in severity of the Syrian crisis, refugees have fled into European states creating drastic changes in the social, political, and economical position of these countries. Europe is experiencing a racial and economic crisis from the recent influx of these refugees, and countries like Sweden and Germany have gone against the tide by accepting an extremely large amount of refugees. This change in social structure has made it more difficult for a country like Germany to define its own national identity, as the pressures from other countries and from itself influence their response to the crisis. How does the recent influx of refugees into the European states affect the national identities that modern day German’s create for themselves? Germany’s past struggles with national identity following World War II plays a large role in their current response to the Syrian Crisis and refugee intake, resulting in a drastic change in the social, political, and economic divisions within Germany that has, once again, begun a national identity crisis for their country and citizens. We will perform a literature review and a qualitative and quantitative analysis, considering Germany’s historical past and identity struggles, and the part this plays in their response to the Syrian Crisis. It is hoped to gain a clearer idea of how political, economical, and social changes can affect a nation’s identity and how the members of that nation identify themselves within the country.

**Title: The Creation of A Solo Performance**

**Name:** Diana Negron  
**Mentor(s):** Fanni Green  
**Program:** Theatre Performance

Abstract: This project started out as a Directed Study with Professor Fanni Green. The purpose was to study, create and perform a solo performance. My aim was to see if audience members would find a solo piece of theatre as impactful as a mainstage production with a large cast. This study involved a series of stages. Stage one was writing. Over the summer of 2016 I free wrote on notecards. Stage two was reading, here I read the notecards for the first time with my mentor and director. After reading them we divided them into categories: Love Life, Family, Self-Image, and Random. The third stage was drafting/research. I studied other solo artists’ works to learn their approach to writing and storytelling. I took the notecards and began the first draft of my script. After creating my first draft, I facilitated a session with other students in the Theatre department to hear me read aloud my script and fill out a questionnaire. Through this I found what flaws were in the script and what areas I could expand or erase altogether. Stage four was rehearsal/script. Rehearsal lasted about three works, and rewrites were still being made to the script throughout. Performance was the last stage. I performed my solo piece, Put A Pillow Over It, for two nights and received audience feedback. Through this research, I have learned the structure and creation of solo performance, the
impression it can leave on an audience, and with opportunity I’d like to continue solo work.

**Title: Cloning and Characterization of cell-associated Collagenase Enzyme in Encapsulated and Nonencapsulated S. pyogenes**

**Name:** Duy Nguyen, Thanh Nguyen  
**Mentor(s):** My Lien Dao  
**Program:** Biomedical Sciences

Abstract: The emergence of nonencapsulated streptococci in invasive bacterial infection suggested that the loss of capsule has exposed some surface proteins that may assist their attachment and colonization of soft tissues. Some nonencapsulated Streptococcus pneumoniae (NESp) express surface protein K (PspK), a factor responsible for NESp adherence to human epithelial cells. A surface-bound collagen type I-binding protein (Cpa) has also been identified in S. pyogenes (group A streptococcus, GAS). In the Dao laboratory (CMMB Department, USF), a homologous cell-associated collagenase enzyme has been detected in invasive streptococci, including S. agalactiae (GBS), oral streptococci causing bacterial endocarditis, and GAS. It is hypothesized that cell-associated collagenase is a spreading factor in nonencapsulated streptococci. The present report is on the cloning and characterization of cell-associated collagenase enzyme in encapsulated vs. nonencapsulated GAS. GAS strain MGAS5005 (SpMGAS5005) was treated with lysozyme, or cultured in M9 medium containing glycine for comparative analysis of collagenase activity. A novel “Blue Collagenase Assay” (USF-Dao pending patent) was used to measure collagenase activity in encapsulated vs nonencapsulated GAS, and in recombinant Escherichia coli. SpMGAS5005 expressed the highest collagenase activity when cultured in M9 medium containing glycine, which prevents cell wall synthesis. PCR analysis confirmed the presence of SpMGAS5005 spy0491 gene in recombinant E. coli, and SDS-PAGE showed a 75kDa band corresponding to GST-collagenase fusion protein. The highest expression of collagenase activity in non-encapsulated SpMGAS5005 suggested that the enzyme is a cell-associated surface enzyme. The role of cell-associated collagenase in SpMGAS5005 dissemination will be further investigated.

**Title: The Revolution of 3D Printing Technology in the Construction of a Fractured Clavicle for Therapeutic Uses**

**Name:** Thao Nguyen  
**Mentor(s):** William Brazelle, Emily Hall  
**Program:** Biomedical Sciences

Abstract: There are many existing techniques for diagnosing fractured bones such as X-rays, CT or MRI. Despite the costs and some risks, they are useful tools in diagnosing and guiding physicians during treatment. However, in some severe cases, it is still challenging for orthopedic surgeons to visualize the bone structures completely, which can limit their understanding and their success rates in surgery. In particular, optimal treatments for displaced midshaft clavicle fractures are open reduction with plate fixation or intramedullary fixation. 35% of complications of these treatments are the result of inadequate surgical technique that can be avoidable. Recently, there has been a rise of 3D printing technology that is considered to be the revolution of medicine. Affordable 3D printing technology, which can offer real, tactile feedback for a bone structure, may further enhance physicians’ understanding about the pathophysiology of the fractures. Operational
procedures mentioned above can be performed well and complications can be reduced with the assistance of 3D models. Therefore, this study seeks to measure the effectiveness of using 3D printing technology to understand a hypothetical case of a midshaft (middle third) clavicle (collarbone) fracture. Successfully creating an accurate representation of a hypothetically injured clavicle using 3D printing softwares would enable it to supplement two-dimensional images with accurate 3D models that could be used to practice the surgical repair prior to opening the patient up. Ultimately, medical students and physicians could use this approach to better prepare for surgeries which could result in fewer complications and improved patient outcomes.

**Title:** US Application of Responsibility to Protect in Libya  
**Name:** Breanna Nierlich  
**Mentor(s):** Camara Silver  
**Program:** International Studies  
**Abstract:** In 2011, Libya experienced a revolution that was a byproduct of the Arab Spring that ousted the oppressive dictator, Muammar Qadhafi. Qadhafi’s armed forces then mounted an attack on the rebel uprising, which resulted in physical and mental harm. These attacks equated to human rights violations that were declared as crimes against humanity and war crimes. It has also been argued that Qadhafi’s attack on his people of mass bombing, and several attacks on the different cities in Libya, were acts of terrorism. Such cases provide just cause for humanitarian intervention. Humanitarian intervention was rationalized with a responsibility to react and to protect, which includes the United Nations’ doctrine Responsibility to Protect (R2P). R2P is further defined by international law and the R2P Pillars. In regards to humanitarian intervention in the circumstances of genocide, war crimes, crimes against humanity and ethnic cleansing are of “just cause.” R2P was introduced as an international commitment doctrine to intervene in times of humanitarian emergencies. A significant element of R2P in regards to the sovereignty and territorial integrity of a country is that R2P can only be exercised when the state proves itself as unable or unwilling to protect its civilians. This is one of the two R2P Pillars; states must also have the capacity to protect its civilians. Under these international pragmatisms, Obama saw it fit to exercise R2P in the case of Qadhafi attacks on his civilians. Accordingly, how did Obama use R2P in Libya to stabilize the Middle East? This research argues that the Obama Administration used R2P not only to coil the crimes against humanity and war crimes in Libya but to stabilize the already fragile Middle East due to the Arab Spring. The combination of presidential speeches, White House correspondences, and news articles provides an archival analysis on the use of Responsibility to Protect under the Obama administration. As Qadhafi continued to terrorize his people, the responsibility to protect the Libyan civilians was on the shoulders of the international community.

**Title:** Are There Differences in How Children Perform in Phonological Awareness in Spanish and in English?  
**Name:** Natasha Ocasio  
**Mentor(s):** Maria Brea-Spahn  
**Program:** Communication Sciences and Disorders  
**Abstract:** Phonological Awareness (PA) allows individuals to consciously analyze and synthesize phonological units (e.g., syllables, onsets and rimes, and phonemes) in words for fluent reading (Troia, 2004). For English-speaking children, a variety of studies have identified a correlation
between complex phonological awareness tasks like the task that requires the deletion of phonological units of words, or elision, with reading and spelling performance. For researchers interested in identifying whether similar patterns would be present for emerging bilingual children, one drawback exists: Currently, there is no standardized assessment of phoneme deletion in Spanish. In this study, the investigator proposes to investigate whether there are similarities and differences in performance in two phonological elision tasks, one in Spanish and one in English, as a result of (a) the complexity of the word part that is to be deleted (e.g., from words, to syllables, to onsets) or/and (b) the language of test administration. Approximately ten children ages 4-6 years, speakers of Spanish and English, will participate in one testing session. The investigator will administer an experimental task that requires children to delete words, syllables, and onsets in Spanish words. This task was designed to match in structure and purpose to the Comprehensive Test of Phonological Processing, Elision Sub-test (Wagner, Torgesen, Rashotte, & Pearson, 2013). Identifying performance patterns in Spanish and English phoneme deletion tasks has educational implications. For educators, results may propose a specific order of phonological units that must be targeted in instruction of phonological awareness with bilinguals.

**Title:** An Exploration of the Intersection between Black Music and Teaching Computer Science

**Name:** Stephy Oge

**Mentor(s):** David James

**Program:** English

**Abstract:** This poster recognizes the overarching need for multiculturalism in the field of computer science and related fields. After identifying key themes in the literature, we seek to explore the links between culturally relevant pedagogy and computer science, using Black music with college students. Data will be collected from pre- and post-surveys given to students in an introductory computer science course. Participants will be freshmen and sophomores not in computer science majors at a small mid-Atlantic liberal arts university. The practical implications of this quantitative study are to examine the best practices of teaching computer science to college students to increase ethnic inclusiveness in the field of computer science.

**Title:** Oyster Flume Study

**Name:** Daniel Osborne

**Mentor(s):** Susan Bell

**Program:** Marine Biology

**Abstract:** The success of restoration projects may be augmented by designing artificial substrates with abundant refuge spaces and ample water flow to deliver oyster larvae to those refuge spaces. The objective of this study is to determine how habitat complexity alters water movement through and around oyster structures to better understand recruitment patterns. Four treatments of varying shell orientations will be used to compare refuge sizes to water dynamics among the various orientations. Water flow through and around oyster structures will be analyzed before and after colonization of oyster larvae to compare water flow dynamics with varying shell orientation. This study will further assess how 3D habitat architecture influences oyster recruitment by measuring the volume of interstitial spaces dictated by shell orientation. Flat surfaces and the tops of oyster shells will likely experience greater instantaneous velocities than spaces in between shells,
resulting in less oyster recruitment. Greater oyster recruitment is expected on the structures with 90° orientations of artificial shells, due to the greater refuge spaces. On the contrary, less recruitment is expected on the structures with 0° orientations. The structures with mixed orientations are expected to have intermediate recruitment. Horizontal structures are expected to have greater habitat complexity. Boundary layers are expected to be altered, post-recruitment of oysters, due to physical obstructions from oyster recruits.

**Title:** Stress-induced nucleocytoplasmic shuttling of TDP-43 is controlled by eIF-5A hypusination  
**Name:** Carlos Osorno-Cruz  
**Mentor(s):** Maj-Linda Selenica  
**Program:** Biomedical Sciences  
Abstract: Aggregation and phosphorylation of TAR DNA-binding protein-43, TDP-43, has been found to be associated with the neuropathology of amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTLD). TDP-43 is physiologically found in the nucleus and is transferred to the cytoplasm when pathological. It has been proposed that under cellular stress the aggregation of TDP-43 may be due to the formation of stress granules (SG). Stress granule formation is activated through a post-translational pathway were a hypusine amino acid is added to eukaryotic translation factor 5A (eIF5A). In this experiment we investigated the role of eIF5A in stress granule formation, TDP-43 expression and phosphorylation. We found that inhibiting the hypusination or downregulating the expression eIF5A led to reduced levels of total and phosphorylated TDP-43. These results showcase a new mechanism by which TDP-43 is regulated and highlight a possible route of therapy for neurodegenerative diseases.

**Title:** Either Way You're Wrong: A Glimpse into Epicene Pronoun Usage in College Students' Formal Writing  
**Name:** Karine Palascak  
**Mentor(s):** Judith Bryant  
**Program:** Communication Sciences and Disorders  
Abstract: The English language failed to develop a pronoun in the third-person singular form that is gender neutral, or epicene. With gender and gender equality being important and current topics, my study looks at how college students combat this problem in the English language in their formal writing. In the 1800s prescriptive grammar said that using epicene he was correct and included both genders. In the 1970s this idea began to be challenged and a greater emphasis was put on replacing “sexist language.” Language is continuously changing over time; this is called “linguistic drift.” My study is a replication of one done in 1999. The goal is to describe what forms of pronouns college students use in formal writing and see whether there are any gender differences or any changes over time. Participants write a brief essay that answers a prompt designed to elicit the use of an epicene pronoun: “What is an Educated Person?” They also complete a grammar questionnaire and questions assessing their awareness of sexist language. Preliminary analysis of 47 transcripts reveals that singular they is the most common pronoun used. That is, 70.2% of writers only used they in their essays, and 8.5% used a combination of they and other pronouns. This is evidence of continued linguistic drift towards they. Of the writers who did not use they, 75% of them were women. Once all data are analyzed, gender differences, changes over time, and
Title: Barriers to Fruit & Vegetable Intake in At-Risk Populations
Name: Abigail Parrigan
Mentor(s): Susan Woolford
Program: Marine Biology
Abstract: Obesity is a significant problem in America impacted by fruit and vegetable intake. While obesity is a universal concern, a disparity exists for certain populations. This disparity may be affected by an inequity in fruit and vegetable access for these populations. The purpose of this study was to conduct a systematic review of the barriers that exist to consumption of fruits and vegetables for low-income or minority populations, as well as some of the potential solutions to overcoming these barriers. PubMed was searched, following PRISMA guidelines, for peer-reviewed articles published since 2000. The identified studies were evaluated for inclusion of suggested barriers and proposed solutions. Using this approach, 510 articles were identified, and a final 17 manuscripts met the eligibility criteria. The studies found utilized various methods, and included both pediatric and adult populations. Of the many barriers noted, the top four were cost, lack of fresh fruits and vegetables (FFV), general perceptions and preferences, and knowledge of nutrition; these were stated in 70.6%, 64.7%, 64.7%, and 52.9% of the articles accordingly. There were 9 potential solutions identified, but the most effective were the 5 that addressed the top four barriers mentioned above. A number of the barriers identified addressed access, suggesting that an inequity exists, and not just a disparity. Most solutions that were effective in increasing fruit and vegetable intake combined an access initiative and an education component. Further solutions should be directed toward some of the top barriers identified in order to improve outcomes.

Title: A Deep Learning Approach for Bladder Cancer Screening
Name: Raj Patel
Mentor(s): Peter Mouton
Program: Biomedical Sciences
Abstract: We present a cancer informatics tool to assist clinicians with the early detection and diagnosis of bladder cancer (urothelial carcinoma, UC). UC is a common cancer that causes significant sickness and death in both men and women over fifty years of age. Since recurrent disease is frequent, transurethral cystoscopy every few months for life makes urothelial carcinoma one of the most difficult and expensive cancers to follow. Urine cytology is a non-invasive, painless and less costly alternative to the cystoscopy goldstandard for diagnosing UC. Positive urine cytology is a strong indication for UC. However, the assessment of urinary cytology requires on exquisitely trained cytopathologist to make qualitative estimates of nuclear: cytoplasmic ratio (N: C), hyperchromasia, nuclear membrane irregularity and irregular chromatin clumping. Due to lack of standardization this approach shows high inter- and intra-observer reproducibility; and false negative and false positive diagnoses lead to significant morbidity and mortality. We have developed a state-of-the-art hardware-software approach using extended depth-of-field images and segmentation algorithms in conjunction with microscope automation to quantify N: C and other morphological features associated with neoplastic cell growth. The cancer informatics tool applied to Thin Preps of Pap smears has been previously shown to provide high sensitivity and specificity for detection and classification of cervical cancer. Applying this approach to urinary samples
addresses the critical need for a painless, non-invasive, objective, cost-effective and high-throughput tool to assist with the screening and diagnosis of UC.

**Title:** Alzheimer’s Treatment Through the Synthesis of Rhodanine Compounds to Enhance Tau Degradation  
**Name:** Shreya Patel  
**Mentor(s):** James Leahy, Andrea Lemus  
**Program:** Chemistry  
**Abstract:** Alzheimer’s disease (AD) is a type of dementia that causes problems with thinking, memory, and behavior. Its symptoms slowly develop and worsen over time to the point that performing daily tasks becomes difficult for the patient. Although majority of people with AD are 65 and older, it is not a disease of old age. Moreover, in the United States, it is the sixth leading cause of death. Evidence shows that the causes of AD are beta-amyloid plaques and tau tangles. Sometimes combinations of these two can also be present. These plaques and tangles block nerve cell communication. Currently, there are treatments that slow its symptoms, but no cure. Research is being performed all over the world to create new treatments for AD to delay progression or completely prevent it. One possible target for treatment is the Heat Shock Protein 70 (Hsp70) family. Hsp70 is a set of molecular chaperones that bind to misfolded proteins to send to lysosomes, also referred to as “triage” chaperones. In collaboration with researchers in the Byrd Alzheimer’s Institute, we have been working to create new set of rhodanine compounds through organic synthetic pathways that use Hsp70 to improve the tau degradation.

**Title:** The Pronoun Problem: Possible Challenges of Epicene Pronouns in the English Language  
**Name:** Dhruv Patel, Priya Shukla  
**Mentor(s):** Judith Bryant  
**Program:** Biomedical Sciences  
**Abstract:** The English language lacks a singular, gender-neutral pronoun (i.e., an epicene) that can be used in cases where gender is unknown. Writers and speakers often solve this problem by using the plural they, the epicene version of he to refer to someone of unknown gender. We analyzed how modern English speakers deal with the lack of an epicene pronoun and compared them to prior findings in our lab to explore speech trends over the last 25 years. We conducted spontaneous interviews with 64 adults on the USF campus, asking people “What is an educated person?” Independent coders reviewed the transcripts to identify codable examples of pronoun usage. Content analyses revealed a widespread use of the plural they as if it were singular to replace a gender specific pronoun. The singular they was used by 65% of the participants. The pronoun he was only used at least once in 6.25% of speech samples. The female pronoun she was never used. These results show that most speakers chose the singular they to leave the subject gender unspecific even though some of these solutions are ungrammatical. The results of this study concur with the results of the same study conducted in 1999. The previous study found that most English speakers avoid using the epicene he by substituting they. The overwhelming use of they also supports that the epicene he is not considered inclusive of females, as found in the previous study.
Title: The Influence of Social Stigma on Mental Healthcare in India
Name: Neha Pathak
Mentor(s): Lindy Davidson
Program: Psychology
Abstract: Mental health disorders have been culturally stigmatized in India for decades. Mental healthcare has not been given much consideration, funding or support. This can be especially difficult for individuals who suffer from chronic disorders that result in disabilities. This is a superficial understanding of mental health and its public relation. Therefore, this research will aim to explore the question: what is the public perception of mental disability in India and how does this influences public health policy? This project will explore published literature and texts in psychology journals to gain a professional perspective on the topic. I also hope to interview individuals for further insight. I propose that mental health stigma within Indian culture is a result of a historical or religious event and that this has further propelled the nation to ignore mental disability as a health issue. Further research should be conducted to determine how to implement social and political change.

Title: Dual drug therapy versus Individual drug therapy to repress expression of VEGF and HIF
Name: Shrushti Patil
Mentor(s): Shannon Kelly, Vijaykumar Sutariya
Program: Microbiology
Abstract: Age related Macular Degeneration (AMD) and diabetic retinopathy (DR) are the two leading causes of vision loss in adults above the age of 40 in United States. Inflammation and angiogenesis, the major characteristics of AMD and DR, are caused by an increased expression of vascular endothelial growth factor (VEGF). It has been reported that hypoxia-induced factor (HIF-1α) induces the overexpression of VEGF and other proangiogenic factors that play crucial roles in ocular conditions. A dual drug delivery system of both HIF-1α inhibitor and a VEGF suppressant may prove a viable therapeutic strategy. This study evaluates the efficacy and cytotoxicity of a dual drug therapy containing a HIF-1α and VEGF inhibitors in ARPE-19 cells. Combination of drugs and individual drug will be used on cell cultures. The HIF inhibitors Doxorubicin (DOX), Digoxin (DIG) and Honokiol and the VEGF inhibitors Triamcinolone acetonide (TA) and Loteprednol etabonate (LE) will be used separately and in combination to reduce the expression of HIF-1α and VEGF. Cell viability will be measured using MTT assay to measure cytotoxicity. MTT assay will be done using increasing concentrations of each drug. A dual drug therapy is a more efficient method to reduce the expression of HIF and VEGF compared to single drug therapy. The most effective combination will be determined through this experiment.

Title: Study to Determine the Characteristics and Conditions Required for Successful Passenger Rail Transit Implementation
Name: Gabriel Patil
Mentor(s): Kerry Walsh
Program: Business
Abstract: Knowing which forms of public transportation, if any, will generate a net positive impact in a metropolitan area involves the consideration of several factors. When looking to increase
transportation options, many municipalities consider Passenger Rail Transit offerings like Light Rail and Commuter Rail. This body of research examines industry best practices developed by cities and municipalities that have recently implemented Passenger Rail Transit and utilizes existing research on metropolitan transit initiatives in order to find the characteristics and conditions necessary to construct Passenger Rail Transit that yields net positives for the surrounding community. While the study will be applied to the Tampa-St. Petersburg Metropolitan Area, stakeholders in any United States metropolitan area that is investigating rail as a possible transit solution can utilize the findings within it as a resource. Quantitative and qualitative data has been collected, analyzed, and reviewed in order to establish correlations and trends, and deliver a verdict on how Rail Transit can best integrate into the Tampa-St. Petersburg Metropolitan area. Completion of the research found that, like even the most efficient public transportation operations in the US, rail transit in Tampa Bay would be revenue-dependent. However, the indirect benefits associated with rail transit can offset the costs to operate and realize a positive return on investment across the economic region when implemented correctly. The most successful forms of rail transit move across hubs of high activity, population density, and employment density, and spurn advantages such as higher property values, decreased road traffic, and increased residential and commercial development.

**Title:** Effects of amyloid-beta vaccine on tau pathology in a mouse model of amyloid deposition with hippocampal tau deposition  
**Name:** Lorena Pena  
**Mentor(s):** Aurelie Joly-Amado  
**Program:** Biomedical Sciences  
**Abstract:** Alzheimer’s disease is a neurodegenerative disease whose cause is yet not fully understood. Yet, we do know that its neuropathological signs include Beta-amyloid plaques and neurofibrillary tangles composed of phosphorylated tau proteins. In recent studies, it was shown that the A-Beta vaccine did not work in humans. Therefore, in this research study we intend to understand the effect of the Beta-amyloid vaccine on amyloid beta and tau pathologies. 19th month old APP mice injected with a virus containing human full length tau in the hippocampus were used. Mice received an intramuscular injection of either the amyloid-beta vaccine or the adjuvant every 2 weeks for 2.5 months (n=10 per group). Non-transgenic littermates injected with tau virus were used as controls for tau pathology. Virus expression and pathology were analyzed by immunohistochemistry. Analysis of amyloid beta staining showed no significant difference between the groups. Assessment of tau markers will indicate if the vaccine had an effect on tau pathology.

**Title:** College Students Perceptions on Emergent Literacy  
**Name:** Demelza Pendarvis, Christie Francois, Rachel Redfern  
**Mentor(s):** Steven Surrency, Yagmur Seven  
**Program:** Communication Sciences and Disorders  
**Abstract:** The preschool years are critical to the development of early literacy, such as alphabet knowledge and print awareness, that will lay the foundation for future academic skills (Gischlar & Vesay, 2014). The current research focuses on the correlation between literacy history of University of South Florida students and their perceptions on literacy development. This is
particularly interesting because college students will potentially become parents who pass on their perceptions of early literacy to their children. USF students will be conveniently recruited via email to participate in two surveys: an adult reading questionnaire of 26 items developed by Dianne Leffly and Bruce Pennington, and another questionnaire of 50 items on a Likert scale, with 0 as “not at all important” and 4 as “very important,” to gauge views of the importance of literacy artifacts and events in preschoolers’ lives, developed by Jill Fitzgerald, Dixie Spiegel, and James Cunningham. A minimum of 30 responses will be analyzed by calculating correlation coefficients. It is expected that students with higher literacy history scores will regard early literacy as more important than students with lower literacy history scores. However, in a previous study that analyzed the relationship between parental literacy level and perceptions of emergent literacy, a significant negative relationship was found (Fitzgerald, Spiegel, Cunningham, 1991). The current results will be helpful to understand the relationship between reading history and the importance given to early literacy skills. Further, we may be able to indicate factors that can hinder a child’s academic success at any level.

**Title:** A Spark of Insight: The Creative Process and the Future of Music Education  
**Name:** George Pennington  
**Mentor(s):** Clint Randles  
**Program:** Music Education  

Abstract: In the field of music education in the United States, there are practices that have been more highly regarded over time than others, since the beginning of compulsory school music education that started with Lowell Mason in Boston, MA, in the 1830s (Mark & Gary, 2007). These practices have often included most notably band, choir, and orchestra. These large-ensemble musical offerings that service many students by way of one teacher who serves as the conductor have been the bedrock of school music education from the beginning. Researchers and practitioners from around the globe are now working to understand how popular musicians learn (Green, 2002), and are using those understandings to build music education curricular offerings that incorporate opportunities to make music the way that musicians do in the real world (Green, 2008). This action research project (Stringer, 2014) examines the creative process through the use of an auto-ethnographical lens, the personal experiences of undergraduate music majors in USF’s innovative music education program that embraces and furthers the work of scholars and researchers in this area (Williams & Randles, 2017; Randles, in press). Results suggest that creativity can be beneficial in the lives of future music teachers as a way for them to grow their own personal musicianship, with the end goal of being able to grow that same musicianship in the lives of their future students. Researchers and practitioners in this area might examine the impact of creativity in the lives of K-12 students, given the growth of “modern band” as a curricular offering (Randles, Droe & Goldberg, in press).

**Title:** Characterization of myeloid-derived cells as regulators of peripheral immunity in animal model of TDP-43 proteinopathy  
**Name:** Valeria Pereira  
**Mentor(s):** Maj-Linda Selenica  
**Program:** Chemistry and Public Health  

Abstract: Cytoplasmic and intra-nuclear aggregation of wild-type TAR DNA-binding protein (WT
TDP-43) in neurons and glia has been associated with the development of neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS) and fronto-temporal lobar degeneration (FTLD). The TDP-43 animal models are transgenic mice that overexpress human WT TDP-43. The homozygotes (TAR4/4) overexpress 2x the endogenous protein levels and the hemizygotes (TAR4) overexpress 1x. These mice were compared to non-transgenic (Ntg) mice to analyze the association of TDP-43 pathology developed with age with the activation profile of myeloid-derived cellular population in the bone marrow. Bone marrow of TAR4/4 mice was only collected at ~1 month of age (time of death). Bone marrow of TAR4 mice was collected at ages 7, 9, and 10 months. Bone marrow of Ntg mice was collected at these ages. Concentration of myeloid-derived cells in the bone marrow was analyzed using a flow cytometer. The antibodies used were: Ly6c-APC, CD3-PE, and F4/80-PE (markers for monocytes, t-cells, and macrophages respectively). Results showed much greater counts of Ly6c and CD3, but very low counts of F4/80 in TAR4/4 samples compared to Ntg samples. For TAR4 mice at 7 months, there were low counts of CD3; at 9 months, there were high counts of Ly6c and low counts of F4/80; at 10 months levels of CD3 peaked. These results should provide insight into the association of peripheral immune response and progression of ALS and FTLD.

Title: Petrological Investigation of 1999-2015 Volcanics from Volcán de Colima
Name: Catherine Peshek, Julia Sumer
Mentor(s): Zachary Atlas
Program: Geology
Abstract: Volcan de Colima is the most active volcano in the Western Mexican Volcanic Belt and closest volcano to the trench near the intersection of the Rivera and Cocos plates. Samples prior to the year 2000 have been well characterized but less has been done on recent samples. We petrographically examined rocks from 1998-2015 eruptions along with three samples from the 1913 pyroclastic flow and tracked mineralogy changes over time, in terms of plagioclase volume percent and anorthite content, pyroxene abundance and hornblende volume percent. We find a general decrease in plagioclase volume during the period 1999-2015. Volcanic products from 2003-2007 show maximum normalized plagioclase volume of 85% and 65% in 2003 and 2004 respectively. Anorthite content decreased from An46-An37 during 2003-2015. Interestingly, anorthite content taken from the 1913 pyroclastic flow sample is the most albitic and evolved of later samples (An28, Average n=18) ranging from An45-An13. Prior studies on 1913 magmatic products show anorthite contents ranging from An67-An46 (Luhr and Carmichael, 1980). Normalized hornblende increases from 0.1% in 2003 towards 2.0% in 2015 showing a general increase over time. The relationship between plagioclase and hornblende along with the unchanging pyroxene concentration suggests an increase in water content over time. Since pyroxene crystallization is not affected by water and plagioclase is suppressed with its presence, the increase of a hydrous phase along with decreases in plagioclase are consistent with a general trend towards increasing magmatic water content. Combined with the decreasing anorthite content, our results seem to indicate that although these magmas may become more hydrous they are evolved products and do not seem to represent new mafic magma.
Title: Dixiecrats and Republicans: The Changing Political Landscape of the Florida Panhandle

Name: Georgia Pevy
Mentor(s): Susan MacManus
Program: Political Science

Abstract: The panhandle region of Florida’s politics has confused many an outsider. This region, which has typically been a very rural area of Florida and consists of mainly white Floridians, usually registers to vote as Democrats, but has been voting for Republicans. Coming from this region, I have a great deal of interest in seeing how this region has changed in the past several years. During my research, I will study the changing demographics and politics of this region of Florida. I expect to find that the region is becoming less-white dominant, and that Democratic Party registration is going down and Republican and Independent registration is growing. I hypothesize that the reason that the registration for Republican and Independents are growing is that many people who were originally registered Democrat are changing their registration over to the party that wins their vote regardless because more people are running in local city and county elections as Republicans and Independents. I am using a mixed-methods approach to conducting research on this area. I will combine quantitative analysis of census data, voter registration data, and election results for the counties in the three media markets that make up the panhandle of Florida from 1960 to the present with qualitative analysis from interviews with several longtime panhandle residents who can describe the changes they’ve seen through the years. I expect my research to support my hypothesis, and for this research to fill in the literature gap on this subject, seeing as there is little to no literature done on Florida’s Panhandle’s politics or demographics. I hope that this will lead to further research done on this area, especially since its relevance to the previous presidential election results in Florida.

Title: Amyloid Beta Nano Particle used to Sensitize Dendritic Cells as a Therapeutic Vaccine against Alzheimer's disease

Name: Phillip Pham
Mentor(s): Chuanhai Cao
Program: Biomedical Sciences

Abstract: The annual cost of Alzheimer’s Disease (AD) is approximately $230 billion. Thus, there is a desperate need to develop effective strategies for AD. Until now, FDA approved drugs could only temporally improve memory by increasing the neurotransmitters in the brain. Therefore, results from data of all FDA approved drugs show that they could not slow down the disease progress at all. Since Aβ accumulation and Tau phosphorylation are the major pathological factors, immunotherapy against pathological factors such as Aβ and Tau have emerged in the past 16 years. There has been evidence that an active vaccination strategy targeting the amyloid beta (Aβ) protein may have some efficacy, as stated by studies in a transgenic mouse model for AD. The history of immunotherapies against AD reveals that AD patients are old subjects with deteriorated immune systems, so a normal vaccine strategy will need strong adjuvants to stimulate and over prime the immune system. However, such adjuvants will lead to over activation of the immune system that induces an unwanted response. On the contrary, the passive immunotherapy relies on infused antibody, and the antibody will not be able to have immune activate effects, so it will not be proper for long term treatment. Thus, the best approach for effectively dealing with AD is to target the
pathological factor and address the impaired immune system for a longer period time. This can be achieved by using dendritic cells obtained from the patient and sensitizing the cells with a mutated form of Aβ.

**Title: Sonic Reclamation of Identity: An Analysis into the Recent Albums of Frank Ocean and Childish Gambino**

**Name:** Bronte Phillips  
**Mentor(s):** Maria Cizmic  
**Program:** Humanities & Cultural Studies

Abstract: Musicians, Frank Ocean and Childish Gambino (Donald Glover) express their perspectives on the contemporary socio-cultural state in the United States through sonic fragments of genres associated with the past. Through conducting an analysis of the albums Blond/Blonde (2016) by Frank Ocean and the Awaken, My Love! (2016) by Childish Gambino, I argue that these albums offer insight into these artists’ opinions of the current issues in modern-day society, specifically gender and race. By examining some of the characteristics and motivations behind popular music within the 1970s, such as Rhythm’n’Blues (R&B), Funk, and Rock, this paper argues that Ocean’s and Gambino’s music suggests parallels between these musicians’ conscious deconstruction and reuse of recognizable musical elements from genres of the 1970s to identities within contemporary culture as an African-American male. Through structuring an analysis of these albums, questions begin to arise about the purpose of reclaiming these genres and about the contemporary African-American male in the US. Analyses of popular music, referring to scholars such as Mark Katz, and musical criticism from the 1970s, act as a platform to support these ideas in connection to these contemporary artists. Similarly, my paper includes support through in-depth analysis of select songs from these albums, breakdowns as to what fragments of genre appear in the music that allow for this interpretation, and the reception of these albums. My hypothesis is that by quoting various genres of black music from the 1970s. Gambino and Ocean are reclaiming elements of their African American identity. My paper will acknowledge voices that were historically silenced and bring modern African-American identity to the forefront of conversation, specifically in the way Frank Ocean and Childish Gambino express their own identities.

**Title: Women with Disabilities in the Dominican Republic**

**Name:** Carina Pinkston  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences

Abstract: People with disabilities have historically been discriminated against and put in a separate category of society. Lack of integration and accessibility can cause a cycle of poverty and segregation against people with disabilities marginalizing them further. Women with disabilities in the Dominican Republic face discrimination due to their gender as well and are often seen as incapable in comparison to able-bodied men. On top of that, women who test HIV positive are denied healthcare and can be fired from their jobs. Though social security programs to aid people with disabilities exist in the Dominican Republic, many women do not receive the proper assistance or healthcare that they need. The goal of this research is to examine the societal gap of women with disabilities in the Dominican Republic and assess the challenges they face in day to day life. By researching disability policy, reading testimonials of women with disabilities in the
Dominican Republic, and examining accessibility issues, potential solutions can be suggested. For example, human rights activists in the Dominican Republic can create programs to educate the public about the discrimination that women with disabilities face. Public policies can be enacted to improve accessibility for women with disabilities. Government programs can provide low cost or compensated assistive devices or services for women with disabilities. These solutions could tremendously aid Dominican women and help to integrate them into society as they should be, regardless of gender, health, or status.

**Title:** Clay Extrusion 3-D Printer  
**Name:** Tina Piracci  
**Mentor(s):** Ezra Johnson, Charles McGee  
**Program:** Studio Art  
**Abstract:** For my thesis, building a clay extrusion 3-D printer was my primary goal. I find pleasantries between the juxtaposition of traditional coil building, and the coil method utilized by the printer. The clay printers that are on the market are all very small scaled and expensive. Also, they use paste deposition, meaning the clay has a high water content allowing it to behave like a paste. With my design, I am able to extrude soft clay, rather than a paste, to allow stronger, larger forms and less shrinkage due to less water loss as the piece dries. The print build is 30 square inches, which is fairly big for a printer of this type. The printer itself stands about 6 feet tall, and it all started from raw materials, such as blocks and extrusions of aluminum that I customized and machined to tailor my interests. When designing the printer, I chose to have it run on polar system. Unlike the most common found printers, such as Delta or Cartesian styles, it uses polar coordinates to determine the positioning, meaning the circular base rotates to define the Y-coordinate and the extruder only moves in the X and Z direction. The purpose of this decision was to further mimic traditional ceramic practices such as pottery wheels or turntables, while also exploiting the materials capabilities of uniform drying. A frequent theme in my work is the contrast between tradition and innovation, and how technical aspects can be merged with concept to produce a full bodied piece of art.

**Title:** Disability in Nepal  
**Name:** Elizabeth Pleggenkuhle  
**Mentor(s):** Lindy Davids  
**Program:** Nursing  
**Abstract:** Nepal is a developing country, and in such countries, the needs of people with disabilities are often overlooked because they either don’t have the resources to meet the needs, or policy makers and healthcare providers are dealing with issues that they see as more pertinent. The Nepalese Civil War persisted from 1996 to 2006, and undoubtedly, the political situation affected the social situation of disability. This research project asks: What are the needs of people with disabilities in Nepal? How are these being met socially, educationally, in healthcare, and in employment? Using academic resources such as journals, databases, government websites, and international statistics, I present a clearer understanding the way that disabilities are treated across the globe in developing countries.
Title: How Will Language Control in Balanced and Unbalanced Bilinguals be Affected by the Removal of the Inhibitory Control Pathway?

Name: Elizabeth Proenza
Mentor(s): Mark Lowry, Judith Bryan
Program: Biomedical Sciences

Abstract: Bilinguals rarely confuse the language they use to speak with their second language. It has been theorized, by the inhibitory control (IC) model, that bilinguals can control their languages by inhibiting one language while they are using another. This model also states that the languages are competing with one another. When inhibition takes place, it takes participants a longer time to switch into their first language than their second language because they had to inhibit it more. The aim of this experiment is to test whether the IC model is accurate and if the mechanism for language changes depending on the proficiency of the speaker by removing the IC pathway to see how this will affect the participants’ results. To achieve this, two experiments were completed, in which line-drawing stimuli were presented to participants, along with a flanker task, and the participants’ reaction time was recorded. The flanker task was present to remove the IC pathway. It was expected that unbalanced bilinguals will have asymmetrical switch costs and take longer to switch into their second language than their first language when the IC pathway is inhibited, while balanced bilinguals will have symmetrical switch costs when switching into both languages and take the same amount of time to switch into both languages. If this occurs, it will be concluded that the inhibitory control model is accurate and that inhibition is responsible for controlling the language that bilinguals speak in.

Title: Frozen by Stress

Name: Kimberly Pusey, Daniel Chittenden, Courtney Ramdhanie, Kelsey Rodger
Mentor(s): Elizabeth Schotter
Program: Psychology

Abstract: A college student overwhelmed by the inevitable stress of the day, may not perform at their maximum potential as stress in testing has been proven to be debilitating (Spielberger, 1975). However, by taking advantage of stress present in test environments, students may be able to use their inevitable stress to their advantage (Lynch, 2006). We designed a study to answer the following question: Is the debilitation of stress or the benefit of context dependence stronger in determining the outcome of an exam? In this study, participants will be asked to memorize pairs of unrelated pictures within 60 seconds, then given another 60 seconds to recall the information on a multiple-choice test. They will be systematically assigned one of 4 conditions formed by a 2 (study: stressed vs. unstressed) x 2 (test: stressed vs. unstressed) factorial design. Stress is defined by subjecting the participant’s arms to submersion in ice water for 60 seconds (Schwabe, Haddad, & Schachinger 2008). We hypothesize that our participants will be able to recall the most paired associations when they are stressed while learning, and unstressed while testing. The stress during learning will help to keep the participant focused, while the relaxation during testing will promote recollection. As a student, the debilitation of stress can come from my feeling stressed and I am unable to glean a productive study session. Proving stress can be beneficial in studying promoting constructive study sessions.

We think that people who are stressed in learning, and unstressed in testing will be able to recall the most because the stress from study will carry over into the test, creating the context dependence
phenomenon, but without the additional stress of the cold water during test they will be able to adequately focus on remembering the material. We think the combination of the context dependence phenomenon and stress will work best, as stress-stress is too much stress, it becomes debilitating; unstressed, stressed is no use as it only causes stress in the end, simulating test anxiety, and unstressed, unstressed will have no stakes/motivation to do well.

**Title:** Neo-Nazism  
**Name:** Lexia Quinlisk, Thomas Damato, Laura Wolf  
**Mentor(s):** Peter Fünke  
**Program:** Chemistry  
**Abstract:** The recent global political climate has seen a drastic polarization in the assembly of far-right ideas, especially in Germany with the rise of the PEGIDA movement. Exclusionary values of movements such as PEGIDA are especially harrowing when assessing Germany’s history of Nazism. The research aims to discover the social implications movements like PEGIDA have on German society, such as harboring fear of “outsiders” in the form of racism. Likewise, due to German history, the study also seeks to find potential connections between Nazi antisemitism and PEGIDA’s Islamophobia. To gather this information, research will look to modern empirical psychology, sociology, and political science to further understand the essential concepts behind the rise of political movements such as the far-right. Research will be done in the form of a meta-analysis: specific research will be done on Nazi and PEGIDA societal implications to find consistencies between the two movements. From there, the methods that PEGIDA uses to generate fear of foreigners in societies will be used to find a potential link to neo-Nazism. The research expects to find two specific conclusions. First, movements like PEGIDA increase pro-exclusionism in German society. Secondly, the research seeks to conclude that movements like Nazism and PEGIDA play on people’s inert racism to rise in power, a distinct connection between the two. Implications behind the research include potential assessments on the psychological impulses behind polar right ideas. Further research could include the connections between global and German conservative practices, as well as combatting the rise of racism.

**Title:** Artificial Intelligence to the Rescue: An Android Application which Recognizes Fall Hazards  
**Name:** Osniel Quintana  
**Mentor(s):** Yueng de la Hoz  
**Program:** Computer Engineering  
**Abstract:** Machine Learning is a subfield of Artificial Intelligence that is used to optimize a performance measure based on a large input set or experience. Despite the field being relatively new, its applications are already abundant in a variety of areas such as the stock market, medical diagnosis, and network optimization in telecommunications. In this research, we examine how machine learning algorithms can be applied to image processing while running the algorithm on an Android platform. The purpose of this research is to create an efficient Android application able to prevent falls by using object detection. This project involved the capture of data through a cellphone camera. The videos captured were analyzed a frame at a time to begin building the ground truth of the application using a python script. TensorFlow was used to train the neural
networks that will later determine the position and depth of an object on the user’s path. Two different models identify the floor and the object on it independently. The application right now can detect objects on any floor with an accuracy of 90%. It still lacks the ability for object definition and understanding. Moving forward, a new model will be developed that is able to detect object perception which will allow the application to determine whether the object represent a hazard for the user or not.

**Title:** Simulating Ion Channels to Aid in Neural Prosthetic Development  
**Name:** Sanim Rahman  
**Mentor(s):** Venkat Bhethanabotla, Robert Frisina  
**Program:** Chemical Engineering

Abstract: Neuromodulation offers enormous potential for addressing many neurological disorders, but it is currently limited by reliance on electrical stimulation, so many researchers are exploring new modalities for activating and inhibiting neural function. Our group has been researching the potential of optical radiation, combined with biocompatible nanomaterials, to provide a new neuromodulation platform. We have demonstrated that electrical excitable biological cells can be stimulated using nanoelectrodes, consisting of gold nanoparticles bound to a glass substrate, combined with a green (532 nm) laser. Highly localized heating results from the laser interaction with the nanoparticles, which in turn modifies capacitance and ion channel function in targeted cells. Although experimental studies have provided evidence to support the thermal modulation of cell capacitance, the molecular mechanisms of ion channel gating associated with this stimulation have yet to be fully explored. The voltage-gate potassium channel (Kv) is a crucial channel for the generation of action potentials, as it drives the repolarization phase. Previous simulations have provided insight into the conformational changes associated with Shaker Kv1.2 channel gating from the open to the closed state. Using all-atom molecular dynamic simulations, we will demonstrate the effects of thermal modulation on the Kv1.2 channel and relate the application of thermal energy to changes in protein structure. Computational investigations of channel activation will provide a better understanding of photothermal neural stimulation mechanisms, which can be used to guide the development of better neural prosthetics.

**Title:** Synthesis of Novel SSH1 Inhibitors as Treatment for Alzheimer’s Disease  
**Name:** Arianna Rashedi, Ousman Jallow  
**Mentor(s):** James Leahy  
**Program:** Biomedical Science

Abstract: Alzheimer’s disease is the 6th leading cause of death in the US, affecting 5.4m people. In 2012, $200 billion was spent on Alzheimer’s and related dementia patients. It is understood that Alzheimer’s disease is caused by the buildup of Beta-Amyloid (Aβ) and tau (plaques and tangles) proteins within the brain. The buildup leads to synaptic loss, brain shrinkage and subsequently memory loss, mood changes and cognitive decline. Although there are medications such as Aricept, Exelm, and Namenda to slow down the worsening of symptoms, there is no actual cure for the disease. We have identified a protein known as slingshot (SSH1) which has been proven to mediate the formation of plaques and tangles in the brain via complex mechanisms. We conducted virtual screening of several compounds by docking them into the catalytic pocket of SSH1 and identified a compound of the type: Thiazolyl-dihydropyridine-carboxylic acid, capable of
Title: Creating a Vocabulary Intervention Plan for a Bilingual, Low SES Child with Hearing Loss

Name: Stephanie Raymond

Mentor(s): Kyna Betancourt

Program: Communication Disorders

Abstract: Vocabulary development is an important predictor of a child’s ability to cultivate strong reading skills. If a child encounters obstacles that hinder his/her vocabulary development, access to the most appropriate intervention is needed. Methods must be individualized for each child taking into account his/her unique physical and environmental history. For example, children with hearing loss have limited access to the auditory information required to build a strong vocabulary. Children learning English as a second language grapple with receiving stimuli from two languages. Finally, children from a low socioeconomic household may be living in an environment where therapy is not the highest priority, and where access to resources is limited. These factors have received substantial attention in the literature. However, little evidence exists on what to do for a child contending with all three factors. With this, this thesis project proposes one intervention plan to address the vocabulary needs of a bilingual child with hearing loss, who is also from a low socioeconomic background. To do this a systematic review was created using current research on the vocabulary challenges unique to each situation. The similarities and differences of these challenges were synthesized to determine what a child in all three categories would likely face and a plan was suggested to address these specialized needs. The intervention focuses on early intervention, language exposure, and parental education, while equally supporting the child and parent. This plan will effectively address all needs of children in this population and hopefully inspire more comprehensive intervention plans.

Title: Communication Breakdown Between Dementia Patients and Their Caregivers

Name: Dylan Raymond, Madeleine Berg, Erica Reed

Mentor(s): Roger Boothroyd

Program: Communication Sciences and Disorders

Abstract: Communication disorders afflict a wide range of individuals, from the very young to the very old, and often make effective communication and meaningful interactions difficult. Language and speech impairments may be the only challenge an individual is facing, while other people have a primary diagnosis accompanied by speech and language issues. One example of this within the older population is dementia. Dementia is a degenerative disorder with numerous symptoms including memory loss, changes in personality, loss of executive function, and language impairment. With this, an individual with dementia will likely experience frequent communication breakdowns, particularly as the disease progresses. This research project aims to better understand
the phenomenon of communication breakdown in dementia patients by investigating stigmas felt by the patient’s communication partners and caregivers. To do this, a survey will be distributed asking caregivers and communication partners to rate various aspects of the communication interactions they have with the patient, such as level of frustration or frequency of breakdown. Hopefully, this research will provide information about the emotions felt by caretakers of individuals with dementia, while also offering insight to what the patients may be experiencing. With this information, professionals would be able to build more effective therapy programs that incorporate strategies to target breakdowns and make communication easier for both parties.

**Title: Child Food Consumption: Examining the Role of Mothers' Work Schedule**  
**Name:** Dylan Reeves  
**Mentor(s):** Kimberly French  
**Program:** Psychology  
**Abstract:** Our study focused on the relationship between mothers’ work schedule (fixed versus non-standard) and feeding styles and their school-age child’s food consumption. We designated work schedule as the predictor of feeding styles and child eating, and as a moderator for the feeding styles-child eating relationship. Our study extends research on work scheduling by relating it to novel health behaviors, specifically mother feeding styles and child food consumption (Li et al., 2014). We hypothesized that mother feeding styles are positively associated with child healthy food intake and negatively associated with sugary food consumption. We also examined mothers’ work schedules as a moderator of the relationship between feeding styles and child eating. For our methods a cross-sectional survey was distributed to working mothers and their children participating in YMCA afterschool program. We tested the mediation hypothesis using path analysis; none of the relationships were significant. We tested the moderation hypotheses using moderated regression. There was a significant moderation effect of work schedule on the relationship between restriction feeding style and nutritious food consumption, as well as the relationship between pressure and sugary food consumption. In support of our hypotheses, the relationship between feeding styles and food consumption was stronger for mothers with fixed schedules compared to those with nonstandard schedules. Overall, these results show greatest support for the moderating role of mother scheduling on the relationship between feeding styles and child eating. Future research can focus on whether the relationship between mother scheduling and child eating depends upon job occupation.

**Title: Efficacy of the Transcatheter Aortic Valve Replacement Approach**  
**Name:** Luis Regalado  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences  
**Abstract:** This project was designed to address the current leading cause of death world-wide, explore cardiovascular disease and focus on an example of innovation that tackles one of these diseases. The prevalent issue of Aortic Valve Stenosis drove researchers and physicians to look for different methods that will keep up with the aging population. The purpose of this senior honors thesis is to explore the efficacy of a less invasive approach when replacing the aortic valve of an elderly patient. I find the effectiveness of this less invasive Transcatherer procedure by looking at pre-surgery and 30-day follow up echocardiograms. I aimed to focus on Aortic Valve Area (AVA),
Maximal Velocity (VMAX), and Mean Gradient (Pressure) while keeping the Society or Thoracic Surgeons Risk (STS) of each specific patient in mind. We hypothesize that the TAVR procedure will show great improvement in valve function, short-term. In the future, projects like these will be the ones to drive the movement of medical innovation towards less invasive and more technology centered practices. With the use of a control, these studies can develop into a comparison of these procedures with the more aggressive standard open heart approach.

Title: Identification and Characterization of a Loss-of-Function Mutation in the Sepia Gene in Drosophila Melanogaster
Name: Krishna Rentachintala, Michelle Afonso, Lynnzie Kipp
Mentor(s): M. Elizabeth Jones-Mason
Program: Cell and Molecular Biology
Abstract: Eye color in D. melanogaster is determined primarily by the formation of two types of pigments, ommochromes (brown) and drosopterins (red). The enzyme PDA synthase produces a key intermediate in the drosopterin biosynthesis pathway. Therefore, disruption of the sepia gene, which encodes for PDA synthase, results in a sepia mutant brown eye color phenotype due to the lack of red pigment production. Here, we are investigating sepia DNA mutations responsible for this mutant brown eye phenotype. We obtained sepia mutant and wild type control fly populations from Carolina Biological, and upon sequencing of the sepia gene, anticipated finding mutations that inhibit gene expression and/or protein formation and function. Genomic DNA was harvested from these populations, and primers were designed to first amplify and sequence for the protein-coding region of the sepia gene. In the sepia mutant flies we examined, PCR amplification and DNA sequencing both demonstrated a deletion within the third and final exon of the sepia gene. Based on the sequencing results, this 238bp deletion results in a 9 amino acid change to the encoded protein, followed by a premature stop codon. We believe this to be a loss-of-function mutation in the sepia gene, accounting for the brown phenotypic eye color exhibited in sepia mutant flies. Further analysis of this and other sepia mutations can serve as a way to better understand the function and regulation of genes mediating drosopterin biosynthesis.

Title: Nutrition for Whom?
Name: Sam Risak
Mentor(s): Jessie Turner
Program: Creative Writing and Women's and Gender Studies
Abstract: I analyzed the nutritional information and presentations of fitness recovery smoothies on the Men’s Health and Women’s Health websites to study how the construction of bodies reflects a differential distribution of power to genders. These recipes represent how popular media utilizes the concept of health to preserve a patriarchal distribution of power, gendering bodies on a binary, exaggerating differences between men and women, and explaining them as results of natural biological variances. I will discuss how a man’s body is positioned as the neutral body, and other bodies are constructed around him to maintain his dominance, women’s expectation to be smaller hindering their performance. I will then explain how magazines’ nutritional guidelines inform readers of gendered-body differences and instruct them on how to create these differences in order to support the magazines' position. These beauty standards and health advice do more harm than good for women as a smaller allotment of calories and thinner ideal require a more nutrient dense
diet that is often hard to get. Finally, I will argue that to accept these differences as biological accepts gender as biologically-determined and oppresses identities underrepresented in media, for not everyone wants or is permitted the bodies promoted in these magazines, but everyone is affected by their dominant position. After conducting my research, I conclude that it is our epistemic responsibility to question who frames our notions of health and whether they have our best interests in mind.

**Title:** *Life Doesn’t Stop for Death*
**Name:** Darian Rivera
**Mentor(s):** Lindy Davidson
**Program:** Honors College

Abstract: Although children around the world die every day, childhood death is not represented in children’s literature. Upon the diagnosis and eventual death of my little brother, I became aware of the unfortunate literary gap about this uncomfortable, yet inescapable topic. There is a critical need for resources to serve the 45,000 American youth that die annually and their loved ones.12 The Institute of Medicine reports a substantial knowledge gap in many aspects of pediatric palliative care including how to best communicate clinical status, provide emotional support and cognitive processing of the clinical status, bereavement support for the family, and the lasting impact of the death on siblings and other family members.12 To guide my research process, I used two questions: What literary resources are available to guide children and families through the dying process? What are the needs for children’s literature on death? I used the concept of social stories and my own personal photographs to guide the creation of my book, *Life Doesn’t Stop for Death*, which chronicles the progression of illness and the impact of sibling loss. Rather than deny its power, we can choose to view death, even the death of a child, as an essential life experience. My hope is that doctors, caregivers, parents, siblings, and the patients themselves can use this story as a tool to navigate their unfortunate circumstances and embrace the time that they have together.

**Title:** *Medical/Developmental Risks at Adoption and Current Mental Disorders in Adopted Chinese Youth*
**Name:** Emily Robinson
**Mentor(s):** Tony Tan
**Program:** Biomedical Sciences

Abstract: Background: To control its population growth, China implemented One-child Policy in 1979. As a consequence of this policy, abandonment of infant girls and infants with medical needs by poor families increased. In mid-1990s, China opened for large-scale international adoptions of children under state care. Due to neglect, the children often had developmental problems. Research Question: Did medical conditions and developmental problems at the time of adoption foreshadow Chinese adoptees’ current adjustment? Method: Survey data were collected with Qualtrics from 250 female adoptees on medical conditions (e.g., Cleft Palate) and developmental problems (e.g., attachment problems) when first adopted, current mental disorders (e.g., anxiety), and current medical and psychological treatments. Validity of medical and developmental problems was confirmed with adoptive parents’ report from 12 years earlier. Results: At adoption, they were 17.4 months (SD=19.3), 90 (36%) had medical conditions, and 71 (28.4%) had developmental problems. Currently, they were 16.6 years old (SD=4.6). Medical problems correlated positively
with number of mental disorders ($r=.20$, $p<.001$) and treatments ($r=.14$, $p<.05$); developmental problems positively correlated with mental disorder diagnoses ($r=.34$, $p<.001$) and treatments ($r=.21$, $p<.001$). Medical problems also positively correlated with developmental problems at adoption ($r=.31$, $p<.001$) and age at adoption ($r=.29$, $p<.001$). Conclusion: Although the adoptees have been adopted for 15 years, their early difficulties remain a risk for mental health problems and treatment. Continued support is needed to help improve Chinese adoptee’s mental health conditions. From a policy perspective, improving orphanage care and expediting adoption of children with medical needs would have long-term benefits.

**Title:** Ghosts and Sunshine: Florida’s Supernatural Attractions and Their Connections to the Living  
**Name:** Katherine Robinson  
**Mentor(s):** Catherine Wilkins  
**Program:** Psychology  

Abstract: Florida is a large and diverse state that relies heavily on tourism for its funding, while also lacking a coherent state identity. These issues are relevant to the field of dark tourism, a category of attractions that focuses on topics of horror and tragedy. Dark tourism’s economic benefits are discernable on a local scale, providing towns with the reputation and venues to sustain tourism levels and the corresponding revenues. Dark tourism may also have deeper impacts: ghost tours and other attractions may impart patrons with a greater sense of identity and understanding about the place they are visiting. This project aims to examine the relationships between Florida dark tourism attractions and their communities to discern their effects on local identity, tourism, and economy. This project examines local dark tourism through the perspectives of psychology, history, sociology, and literature to gain a greater understanding of its value to the surrounding community. Methodology includes literary research, semi-structured interviews, participating in selected dark tourism activities, and comparing tourist reviews of these attractions using strategies of qualitative analysis. The outcomes of this project could have implications for understanding how dark tourism can affect local identities and economies. This thesis strives to bring attention to the immense value of local tales and historical attractions, and demonstrate how they are incredibly relevant to the identity and economy of the state of Florida.

**Title:** The Impact of Attending a Camp Boggy Creek Family Session on the Parent of a Child with a Chronic/Serious Condition  
**Name:** Christine Rodhouse  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences  

Abstract: Camp Boggy Creek is a camp for children with serious illnesses like cancer, epilepsy, arthritis, and spina bifida. Children have the opportunity to attend summer camp in a safe environment with medical staff so their health needs can be taken care of and they can still enjoy summer camp. It is a great chance for these children to bond over similar illnesses and helps them to realize that they are not alone in their journey with their illness. The camp also has family weekends in the fall and spring, which allows the entire family to come and experience camp. This gives not only the ill child a chance to make these bonds like at summer camp, but it also provides the opportunity for their parents and siblings to realize that they are not alone on the journey. This
senior honors thesis asks the following research question: What is the impact of a Camp Boggy Creek family weekend session on the parents of seriously ill children? A survey was distributed to the parents after they attended a family weekend to try and determine this impact. The results of the survey show that the camp has a positive impact on the parents because it gives them a chance to network with other parents while also getting the chance to relax. Programs like Camp Boggy Creek are an important resource for parents with children who have serious medical issues and their impact should be examined further in a large-scale study.

**Title: Culturally Responsive Teaching**
**Name: Kayla Rodriguez**
**Mentor(s): Laura Sabella**
**Program: English Education**

Abstract: A student’s culture impacts the way they perceive information and the way they learn in the classroom. Culturally Responsive Teaching is a pedagogy that acknowledges the cultures of the students in the classroom and incorporates aspects of the cultures into their education. This study takes place in an English classroom at Tampa Bay Technical High School, where the student population is composed of over 50% black students and over 25% Hispanic students. A class of 27 9th grade students was taught about tragic love in Shakespearian tragedies using three strategies that promote Culturally Responsive Teaching: communication of high expectations, student-centered instruction, and learning within the context of a culture. A pre-assessment was given asking students to define “tragic love” in their own words and respond to a few content-related questions. At the end of the unit, a post-assessment was given asking them to use their new knowledge to define “tragic love” once again and answer the same content-related questions. The results of both assessments will be visible for students to see and monitor their growth throughout the unit. Whole class results will be examined from pre to post-assessment, with specific attention to the results of ELL students. The results of this study will show the impact of Culturally Responsive Teaching and whether incorporating student’s cultures into the classroom affects engagement and student performance.

**Title: Hexachlorophene reduces Tau aggregation in cellular models of tauopathies**
**Name: Andrew Rosenblum**
**Mentor(s): Umesh Jinwal, Vetrislavan Manalavan**
**Program: Microbiology**

Abstract: Tauopathies such as Alzheimer’s disease (AD) are neurological disorders are caused by misfolding of the tau protein. Tangles composed of hyperphosphorylated tau are a pathological hallmark of AD. Currently, only a few pharmacological interventions are available for these diseases. Our main goal is to identify a novel tau targeting drug molecule that can be used for the treatment of AD and other tauopathies. We used cell-based tau models such as M17 neuroblastoma cells expressing endogenous tau, HeLa C3 cells expressing human wild-type tau, iHEK 280 cells expressing inducible human mutant tau. Cells were treated with hexachlorophene for 24 hours. Samples were then analyzed by Western blotting and thioflavin-S staining. We found that M17 neuroblastoma cells treated with 10µM hexachlorophene completely cleared endogenous total and phosphorylated pSer396 tau protein. In the HeLa C3 cell model, which over-expresses tau, 2µM
hexachlorophene partially clears total tau and completely clears phosphorylated tau pSer396. In iHEK 280 cells expressing inducible tau, 1.5µM hexachlorophene partially clears total tau and completely clears phosphorylated tau pSer396. Additionally, staining with thioflavin-S clearly indicates significant reduction of tau aggregation at a concentration of 1µM. Overall, our data from in vitro cell-based models of tauopathies suggest that hexachlorophene effectively reduces tau protein. We are currently working on using a combination of hexachlorophene with other compounds such as L-carnitine to maximize tau clearance with minimal toxicity. In the future, to strengthen our findings and to confirm effect of hexachlorophene in vivo, we plan to utilize a tau-transgenic animal model.

**Title:** Disability in Central America  
**Name:** Rebecca Rutila  
**Mentor(s):** Lindy Davidson  
**Program:** Nursing  
**Abstract:** The way in which societies view people with disabilities varies vastly across the globe. Many factors, such as religion, culture and government, contribute to how a specific region views and deals with disabilities. Under-developed and/or developing countries lack concern and resources for people with disabilities. Due to the fact that Central America consists of many developing countries, disability research and care are not at the forefront of society. The lack of resources and significant effort towards people with disabilities, however, does not mean the entire society disregards people with disabilities. Therefore, this project seeks to understand how the Central American society views people with disabilities by asking: How are people with disabilities viewed in society? What are the contributing factors to this general outlook? What things can be done to educate the general public on disability in order to better assist the disabled community? A culture centered approach will be taken. The majority of the research is expected to come from online sources that contain statistical information, governmental policies and laws, and personal experiences on disability from various countries within Central America. Research will also be done on the Central American culture, in hopes of getting a better understanding on the influencing factors in society. This research should provide an understanding for the way in which disability is viewed within the society, and an approach for improving the current conditions for people with disabilities.

**Title:** Growth of ZnSnO3 nanowire arrays on Silica Nanosphere monolayer templates  
**Name:** Aayat Sabah  
**Mentor(s):** Domingo Mateo-Feliciano  
**Program:** Biomedical Sciences  
**Abstract:** Ferroelectric hysteresis behavior with high remnant polarization has been reported from LiNbO3 –type (LN-type) Zinc Stannate or Zinc Tin Oxide (ZnSnO3 ) hybrid nanoparticle-nanowire (NP-NW) arrayed films. ZnSnO3NP-NW’s have already been grown on seeded substrates but for some applications spatial location tunability is desired. To achieve this, a spatially ordered Zinc Oxide/250nm- Silica Nanospheres (ZnO/250nm-SNS) template was used as initial seed layer. Optimal conditions for growth of ZnSnO3NW’s using a low temperature solvothermal process were found and the material was then grown on Aluminum doped Zinc Oxide (Al:ZnO ) thin films and the ZnO/250nm-SNS template. A structural study of the ZnSnO3 NW
array grown on the ZnO/250nmSNS template using X-ray diffraction spectrometry will be performed for different growth conditions to find a preferential growth orientation and crystallinity of NW arrays on the template. Preferential growth of (012) plane of standard LN-type hexagonal ZnSnO3 is expected, as reported in literature. This work has applications in piezotronics and force sensors.

**Title:** Impact on Student Learning for Systems of Equations  
**Name:** Emaline Salvo  
**Mentor(s):** Laura Sabella  
**Program:** Math Education  
**Abstract:** It is important to analyze how teaching strategies taught through coursework actually translates into a real classroom setting. Education majors making their transition into the career need to reflect on their impact to student learning. To analyze my own impact on these students, I will conduct a study in my final internship as a math education major in a Math for College Success class of a diverse school in Hillsborough County, Florida. A class of sixteen students were taught systems of equations using collaborative group work and motivational strategies. They were assessed by administering a pre-assessment directly listing the strategies they were to use and then given a post-assessment where they could choose the best strategy to solve the systems of equations. The results are examined as an entire class for the pre and post assessment. The data is further analyzed using a student that is a lower middle class English language learner in the 12th grade and a middle class 12th grade girl. The results will demonstrate whether collaboration methods for instruction proved to be effective throughout the lessons. They will show transformations in the student’s learning for the pre assessment to the post.

**Title:** Songwriting: A Way Ahead for Music Education  
**Name:** Yeniffer Sanchez, Zoria Daely  
**Mentor(s):** Clint Randles  
**Program:** Music Education  
**Abstract:** In the field of music education in the United States, there are practices that have been more highly regarded over time than others, since the beginning of compulsory school music education that started with Lowell Mason in Boston, MA, in the 1830s (Mark & Gary, 2007). These practices have often included most notably band, choir, and orchestra. These large-ensemble musical offerings that service many students by way of one teacher who serves as the conductor have been the bedrock of school music education from the beginning. Researchers and practitioners from around the globe are now working to understand how popular musicians learn (Green, 2002), and are using those understandings to build music education curricular offerings that incorporate opportunities to make music the way that musicians do in the real world (Green, 2008). This action research project (Stringer, 2014) examines the future of songwriting through the use of an auto-ethnographical lens, the personal experiences of undergraduate music majors in USF innovative music education program that embraces and furthers the work of scholars in research in this area (Williams & Randles, 2017; Randles, in press). Results suggest that songwriting can be beneficial in the lives of future music teachers as a way for them to grow their own personal musicianship, with the end goal of being able to grow that same musicianship in the lives of their future students. Researchers and practitioners in this area might examine the impact
of songwriting in the lives of K-12 students, given the growth of “modern band” as a curricular offering (Randles, Droe & Goldberg, in press).

**Title:** Transcendence  
**Name:** Erika Schnur-Carter  
**Mentor(s):** Wallace Wilson  
**Program:** Studio Art-Photography  
**Abstract:** In this ever changing society, displacement continues to affect people differently around the world. Artists are constantly required to travel and immerse themselves in new emerging cultures regularly. Until my research began, my view on international art and culture has been severely limited to art history books in which we try to impress upon our imagination an alternative avenue for thinking about art. This aspect of the artistic realm led me to interest in how a visual and cultural change affects us but specifically, how does displacement affect artistic perception, and in turn, how does that experience alter the artistic process and memory for the artist as well as the cognizance of the viewers of art work created within the displaced context. My research methods began with me spending the first two weeks traveling throughout the city without my camera. I wanted to become full submerged into the French culture before I began composing any work. As I traveled from my dorm room to various arrondissements and began to feel a connection with strangers, a belonging to a city that I have never encountered, and a sense of allure. This transition within myself prompted me to begin shooting video of myself walking throughout the city. At times, I would bring the camera into the gallery space and cinematically examine my relationship with the art displayed, much of which is created by artists who were either displaced when they created the work or now their art is being displayed in an environment displaced from the context in which they created it. After a week of shooting video, I began to shoot medium film photography at locations that moved me the most. Shooting film photography in the city it originated in was liberating and gave me a deeper connection with what I was shooting. Transcendence and its’ accompanying research will add an additional layer to the artistic discourse. The blending of the concepts of memory, and identity in regards to voluntary displacement will bring light to the perspective of artistic displacement as well as what affect it has on artwork being made around the world. So often displacement is associated with negative experiences or in art it is referenced in terms of an obstacle that is being overcome. The research I have conducted will introduce a more positive response to this seemingly controversial aspect of art made outside the context of the artist’s origin.

**Title:** Excuse Me, Do I Know You?: Computer Usage and Effects on Relationships  
**Name:** Esha Sharda  
**Mentor(s):** Lindy Davidson  
**Program:** Honor's College  
**Abstract:** The wide use of technology has affected the world in both beneficial and detrimental aspects. In the medical field the introduction of electronic software may have an effect on the quality of patient care that is given. Past studies have indicated that incorporation of electronic health records has resulted in an additional two hours of paperwork for physicians to complete at the end of each day (Hingle, 2016). As a consequence, less time may be spent on physical patient encounters in an effort to lessen the workload. Although multiple studies have been performed on
patient attitude towards electronic software, few have been conducted on the position of physicians, nurses, and other hospital staff. This mixed-method study will help analyze the efficiency of the electronic system in place at Moffitt Cancer Center. The perception and effects of the electronic health records on communication and the doctor-patient relationship will be measured by conducted interviews and surveys. It is expected to discover how the electronic records impact the interactions, both positively and negatively, in the oncology clinic and its effects on the doctor-patient relationship. The results of this study can indicate the strong qualities that the electronic medical records brings to the hospital. In addition, the study will help clarify the drawbacks associated with the electronic medical records. These results will help outline improvements that can lead to the introduction of an effective electronic system, improving the efficiency of the clinic and the quality of the doctor-patient relationship.

Title: Robotic Transhiatal Esophagectomy for a Glomus Tumor
Name: Brian Shaw
Mentor(s): Alexia Athienitis
Program: Biology
Abstract: This video demonstrates the resection of a glomus tumor, a very rare tumor in the esophagus, too large for local excision. Minimally invasive transhiatal esophagectomy was undertaken. Trocars were placed to allow intraperitoneal access. The stomach was mobilized by dividing short gastric vessels and phrenoesophageal membranes. The gastrocolic omentum was divided; the dissection was carried to the right gastroepiploic artery. A pyloroplasty was constructed. Through the hiatus the esophagus was mobilized. The proximal stomach was divided with a stapler. A left-sided neck incision was placed; the cervical esophagus was mobilized and divided. A hole was made in the proximal gastric pouch, through which a nasogastric (NG) tube was directed towards the neck, then sutured to the distal end of the divided esophagus, then withdrawn into the abdomen, turning the esophagus inside-out. The specimen was removed through a 2cm incision near the umbilicus. Another NG tube was passed from the neck 'down' the mediastinum where its end was sewn to the remnant stomach, allowing for the stomach to be delivered into the neck as the NG tube was withdrawn. An anastomosis between the remnant esophagus and stomach was constructed. The intraperitoneal stomach was sutured to the esophageal hiatus to avoid a hernia. Trocar sites on the abdomen were closed. A drain was placed in the neck. The patient tolerated the operation very well. Minimally invasive surgery offers a curative approach for tumors like this while minimizing the insult to patients, allowing for a quick return to functional activities.

Title: How Timing of Infection Affects Co-infection in Post-Metamorphic Cuban Tree Frogs
Name: Brin Shayhorn
Mentor(s): Chloe Ramsay
Program: Psychology
Abstract: Amphibian populations have declined rapidly, due to habitat loss, overexploitation and disease. Understanding amphibian diseases can guide conservation efforts to limit biodiversity loss. While infections with multiple pathogens are common, our understanding is limited on how co-infection and pathogen exposure at different times affects disease severity, through potential pathogen competition. To address these concepts we challenged the Cuban Treefrog (Osteopilus
septentrionalis) with the pathogens Batrachochytrium dendrobatidis (Bd), which causes cardiac arrest and Ranavirus, which causes hemorrhaging. Both pathogens cause amphibian mass mortality. Additionally, we studied the nematode, Aplectana sp. which infects amphibian gastrointestinal tracts, negatively impacting growth. We hypothesize that larger time lags between parasite exposures will lead to a greater competitive advantage for the first infecting parasite species. Hosts were exposed to one of the three pathogens and then challenged (or not) with a second pathogen at five different exposure times, representing different stages in infection progression. The frogs were swabbed to quantify Bd and Ranavirus infection loads, monitored for mortality for four weeks, and feces were checked for Aplectana juveniles. Weights and measurements of the frogs were taken weekly to determine growth rates. We anticipate our results will indicate that longer lags in exposure time between the two pathogens decreases second pathogen loads in the host. Studying co-infection and staggering infections improves our understanding of how interactions between pathogens and pathogen establishment change the severity of disease and alter pathogen-pathogen competition. Understanding these interactions could improve conservation to lessen the impact of pathogens on declining amphibian populations.

**Title:** Comparison of Student Success between Lecture-Focused and Flipped Classroom Designs in an Introductory Biology Course  
**Name:** Lauren Shea  
**Mentor(s):** Luanna Prevost, Chantale Begin  
**Program:** Marine Biology  
**Abstract:** The traditional model of instruction in higher education is lecture-based, yet recent data show that active learning can enhance student success compared to that traditional model. While active learning approaches have broadly been promoted on many campuses they include many different pedagogies and it is unclear what specific approach and what level of student engagement yields the best results for a particular group of students. Research is limited on how flipped classrooms impact student success and whether it is a better alternative to a more traditional lecture-focused instruction in undergraduate biology. The aim of this study was to compare student success between two sections of a USF introductory biology course that were taught in two different ways, flipped with high level of student engagement (n=295) and lecture-focused with low level of student engagement (n=68). We compared grades from each of four unit exams, as well as learning gains (calculated as improvement between a first day assessment and the same questions repeated on the final exam). Preliminary results show that overall learning gains and exam grades were higher for students in the lecture-focused section, however there were interactions with gender and declared major. For example, Integrative Biology students tended to score higher on exams in the flipped section while Cell, Molecular and Microbiology students tended to score higher on exams in the lecture-focused section. Understanding how course instructional methods impact student success is key to developing both student and university achievement.

**Title:** 500 Years Later: Martin Luther's Impact on the Founding and Development of the United States  
**Name:** Aurelia Shears, Jasmine Burnett, Evan Johnson  
**Mentor(s):** Peter Funke
Program:
Abstract: Beyond his role as a religious reformer, Martin Luther also had many ideas regarding proper governmental structure and political policy. While his primary focus remained religious, his discomfort with his political climate mirrored the discomfort of American revolutionaries with their own; a discomfort that ultimately led to the formation of the United States and its political structure. In light of the five hundred year anniversary of Martin Luther’s Reformation, we aim to explore its political aspects, how these ideas influenced the Founding Fathers’ Constitution and Bill of Rights, and how they are expressed in today’s legislative and social practices. The focuses of this project are freedom of speech and religion, separation of church and state, and public education. Martin Luther’s ideas have progressed in the United States from its foundation to modern day. This is reflected in various scholarly articles and government documents, and is continually echoed in current day legislation. The research has shown that Martin Luther’s political ideologies have influenced the Constitution and Bill of Rights of the United States, as well as the current state of American legislative/social practice. These ideologies, introduced long ago by a German monk, are at the center of these historical settings, respectively. The embrace of these findings may assist us in understanding the past, present, and future of the United States.

Title: Critical Analysis of Pediatric Eating Disorder Educational Tools for Pediatric Providers
Name: Chereka Singh
Mentor(s): Alison Oberne
Program: Biomedical Sciences
Abstract: It is estimated by the National Institute of Mental Health that Anorexia Nervosa and Bulimia Nervosa each affect 0.6% of the United States population at some point in their lives, and Binge Eating Disorder has a 2.8% lifetime prevalence in the same population (NIMH, 2016). As the prevalence of pediatric eating disorders rises, they are of extreme importance because these behaviors tend to stay with pediatric patients throughout their lives. Pediatric health care providers play a pivotal role in the primary, secondary, and tertiary prevention of pediatric disorders. The purpose of this research is to understand and evaluate the strengths and weaknesses of the educational resources that are available to pediatricians and, based on this assessment, determine what can be done to improve pediatric provider knowledge. This research project will include three phases; 1) review of existing programs, 2) analysis of findings, and 3) development of a solution to reduce the deficiencies found in phase two. The findings of this critical analysis are expected to describe the magnitude of the issue, as medical doctors receive minimal training about eating disorders. Therefore, more work is needed to improve public health programming and bridge the gap in eating disorder education for doctors.

Title: Can Visual Thinking Strategies Increase a Student’s Overall Self-Esteem and Change the Student’s Self-Concept as an Artist?
Name: Hannah Skiff, Natalie Cowell
Mentor(s): Catherine Wilkins, Ph.D.
Program: English / Honors
Abstract: The question of art making and art discussions has been widely debated in the field of psychology, with scholars such as Rose Bennington (2016) and Paul Camic (2015) arguing that art can be used as a therapeutic technique for both the participants and facilitators. However,
these articles have not adequately addressed the effects of art discussion on artists. This research study addresses a student’s overall self-esteem and self-conception as an artist with special attention to student art creators. Specifically, this project will evaluate the change in self-esteem and self-identification as an artist after involvement in a Visual Thinking Strategies discussion of their personal artwork, in order to show how unbiased discussions of student art can improve self-esteem and self-image as an artist. Data will be collected through quantitative surveys and qualitative interviews and observations and juxtaposed with the pre- and post- components of the VTS session, in order to reveal the previously misunderstood connections explored in this project's hypotheses. In summation, this research study hypothesizes that creating art will boost a student’s overall self-esteem, evaluation of student art in a VTS session will change the student’s self-concept to include personal identification as an artist, and following the VTS session, student creators will be more inclined to participate in art creation again. Consequently, this research study will shed light on the lack of research regarding the benefits to other populations, beyond the participants and facilitators, especially the artists whose artwork is being discussed.

**Title:** Do Religious Beliefs Influence the Prevalence of Particular Disabilities in Spanish Children’s Books?
**Name:** Hannah Skiff
**Mentor(s):** Lindy Davidson
**Program:** English / Honors

Abstract: The question of disability-friendly terminology has been widely debated in the educational, political science, and international relations fields, with scholars such as Schalock (2007) arguing that the use of language regarding disability impacts UN and governmental policies and influences interactions with persons with disabilities in everyday society. However, these articles have not adequately addressed the issue of language and terminology about disabilities in children’s books and interactions among people with disabilities and youth. This research project addresses the issue of prevalent topics of physical disabilities and special needs in Spanish children’s literature with special attention to the influence of religious beliefs over the book’s subject within Latinx cultures. Specifically, this project considers the lack of understanding of intellectual and mental disabilities, in order to show that a gap in understanding of “invisible” disabilities impacts the disabilities discussed and explained to Spanish-speaking children via books. Through an analysis of existing Spanish children’s books and scholarly articles about religious and Latin-cultural views of disability, I will discuss the terminology used and disability types that are popular in Spanish children’s books, and juxtapose these findings against the coverage of all types of disabilities in children’s literature from the United States, in order to reveal the previously misunderstood connections between language, disabilities, and societal interactions, namely among the younger population. By closely examining such books, new light can be shed on the rarely acknowledged issue of informing, educating, and exposing children to various types of disability and disability friendly language through literature.

**Title:** Counteracting the Formation of Amyloid Beta Fibers With Natural Polysaccharides to Prevent Certain Neurodegenerative Diseases
**Name:** Molly Skinner
**Mentor(s):** Zeinab Veisi
Program: Chemical Engineering
Abstract: Alzheimer’s is a neurodegenerative disease that destroys memories and impairs important mental functions. It is the most common form of dementia and currently effects 36 million people. By the year 2050, that number will increase to 115 million people. While it currently is impossible to reverse the effects of Alzheimer’s, there might be a way to stop or prevent it. Amyloid fibers have been connected to the destruction of neurons which causes diseases like Alzheimer’s. While the fibers are destructive, the subunit monomers are harmless to the brain. Our lab has tested the effects of Opuntia ficus-indica, also known as the prickly pear cactus, on these fibers. This extract is edible and currently FDA approved in other medications. It’s water soluble with a flexible backbone and has the ability to bind to fibers at multiple points. We tested two different types of extract to see if three things would happen in the presence of the extract: 1) fibers degrade back into monomers, 2) oligomers revert back to monomers rather than continuing formation into fibers, and 3) monomers remain monomers rather than forming fibers. Using data from Fourier Transform Infrared Spectroscopy (FTIR), we can see the effects that extract has the formation of fibers. The FTIR trials have shown that the extracts do prevent the formation of fibers and revert the fibers back to monomers. We are in the process of moving onto rat trials.

Title: Information Retention: Examining the Effects of Ageism in American College-Aged Learners
Name: Allassandra Slate, Allegra Campbell, Dylan Reeves, Lacy Taylor
Mentor(s): Elizabeth Schotter
Program: Psychology
Abstract: Prior research has found that negative attitudes toward America’s older population are common and may affect social, as well as, professional encounters for all parties (Levy & Banaji, 2004). We examine how a presenter’s age and environmental setting affect the amount of information retained from the presentation by college-aged students. College students could either see older adults as authority figures (or learn more from them) or as out-of-touch (and tune them out). We hypothesized that college-aged participants who observe an older presenter would correctly answer a significantly less amount of content they presented than participants who observe a college-aged presenter. Furthermore, we expect this relationship to be qualified by setting, such that older presenters in casual settings would lead to lower retention while college-aged presenters in casual settings would lead to higher retention. Participants recruited from Florida college campuses will access the study online to view a video in one of five randomly assigned experimental conditions from a 2 (presenter age: elderly vs. college-aged) x 2 (setting: professional vs. casual) factorial design with an additional control condition (presentation by a digital assistant: Siri) and complete a content-related quiz. If we found highest retention in the casual college-aged presenter condition it would suggest that performance on retention tasks can be impaired or promoted by the age of the presenter. Specifically, it would suggest that college students trust or pay more attention to information presented from their peers than from authority figures or those outside their age demographic.
**Title:** Autoinhibition of MDMX by intramolecular p53 mimicry  
**Name:** Stanislau Smirnou  
**Mentor(s):** Gary Daughdrill  
**Program:** CMMB/ Cell and Molecular Biology  
Abstract: P53 tumor suppressor is a highly-regulated protein, with two of the main inhibitors – MDMX and MDM2. MDMX is a protein with 70% disorder and three folded domains. P53-MDMX interaction occurs through p53-binding domain of MDMX and p53 TAD domains. However, MDMX by itself contains a motif that binds intramolecularly to the p53-binding domain and inhibits interaction between p53 and MDMX. This motif, termed WW motif, is separated from the p53-binding domain by the 85 residues long flexible linker. Using isothermal titration calorimetry (ITC), the binding affinity of p53 TAD to MDMX was shown to be reduced by a factor of 400 in the presence of the flexible linker with WW motif. Same results were obtained through estimation of global KD value assuming flexible linker behaves as a worm-like chain (WLC). Further work will focus on atomic-level investigation of transient secondary structure and dynamics of this highly conserved linker domain. This research will provide a quantitative understanding of the role the flexible linker plays in the intramolecular binding and inhibition of the MDMX-p53 interaction.

**Title:** Male Virginity  
**Name:** Mary Snyder  
**Mentor(s):** Michael Heyes  
**Program:** Women & Gender Studies  
Abstract: Virginity was important for salvation during the Middle Ages in the Catholic Church. St. Paul and St. Jerome encouraged both men and women to remain virgins. However, most research about virginity in the Middle Ages has focused on female virginity. Male virginity may be mentioned but rarely explored. Recently, there have been a few articles that have compared male virginity to female virginity (Cullum, 2013; Kelly, 2000) or compared the views of scholars on male virginity (Hofmann, 2007; Rhodes, 2011). My research will review the scholarly writings from and about the Middle Ages and will focus on the audiences for, and the lessons to be learned from, those writings. In addition, I will supplement this synthesis of currently scholarly work with an analysis of physical and spiritual definitions of virginity and how they applied to men. This will include a review of the challenges and temptations that men faced with respect to maintaining their virginity. Based on this research, I will argue that male virginity was just as important as female virginity for salvation in the Middle Ages not only for the clergy, but also for monks and laymen.

**Title:** Coffee and Caffeine Enhance the Heat Shock Response and Promote Proteostasis in *Caenorhabditis Elegans*  
**Name:** Alana Snyder  
**Mentor(s):** Sandy Westerheide  
**Program:** Chemical and Biomedical Engineering  
Abstract: Moderate consumption of coffee has been suggested to protect against and slow the cognitive decline associated with aging. We were interested in determining the effects of coffee on the Heat Shock Response (HSR). The HSR is a highly conserved cellular response that
functions to maintain proteostasis during stress. The mammalian HSR is mediated by the transcription factor heat shock factor 1 (HSF1). The HSR is conserved in Caenorhabditis elegans, and is mediated by the HSF1 homolog HSF-1. During stress, HSF1 transcribes heat-inducible chaperone genes that encode heat shock proteins (HSPs) that function as molecular chaperones to maintain proteostasis. Induction of the HSR may be beneficial for protein-conformation diseases and has been proposed as a therapeutic target for neurodegenerative disorders. To investigate the regulation of hsp-70 mRNA induction by caffeine, we compared the effects of caffeinated and decaffeinated coffee. Nematodes were left untreated (control), or treated with caffeine, decaffeinated coffee, or caffeinated coffee extract prior to treatment with a heat shock (HS). Fluorescent images were taken of synchronous phsp-70::GFP reporter nematodes and fluorescence intensity was quantified using ImageJ. Treatment with coffee enhances HS-inducible hsp-70 mRNA expression, where caffeinated coffee resulted in greater induction of hsp-70 mRNA expression, with caffeine showing the most robust induction of hsp-70 mRNAs. Additionally, treatment with caffeinated coffee and pure caffeine suppressed polyglutamine aggregation in a C. elegans Huntington’s disease model. These results demonstrate caffeine as a component in coffee that may elicit neuroprotective effects by promoting proteostasis through induction of the HSR.

**Title:** Modern Luciferianism and the Medieval Response  
**Name:** Deven Soondar  
**Mentor(s):** Michael Heyes  
**Program:** Religious Studies  
Abstract: Since his conception, Satan has been viewed as the personification of evil and the primary opponent of God, especially by Christianity. However, today he is more popular than ever, reaching all corners of the world. The tumultuous society of medieval Europe provided a breeding ground for permeating ideas that have been revitalized in the modern era. In fact, the Church’s response to the Satanic groups in the medieval period is largely responsible for the treatment of such followers in the time thereafter; so much so that its social and political importance fixed its position in the public conscious for centuries. These earliest instances would serve as models for the further persecution of alleged heretics and pagans alike. This paper will examine how elements of early Christianity and other medieval religions fused as they attempted to counter what is now modern Luciferianism, as well as how this response resulted in the treatment of these alternative religions in modern Western society.

**Title:** The Luxury of Having a Home: Housing Prices versus Homelessness  
**Name:** Andrea Soto  
**Mentor(s):** Mark Dummeldinger  
**Program:** Marketing and Finance  
Abstract: Homelessness has become important in shaping the lives of many people. In one point in time count during January 2015, 578,424 people were counted as homeless in the United States. (2015, National Alliance to End Homelessness) In order to figure out ways to end this epidemic, different viewpoints for its cause need to be considered. One of the factors that could affect homelessness is the housing market. As the rates in this market fluctuates, it is very possible that the rates of homelessness also fluctuate. The research question considered is: “Does local housing markets affect homelessness?” In order to test this, few hypotheses were used. These include
median home prices, median rental prices, the rate at which people are renting in an area, foreclosure rates, and the number of shelters all affect homelessness. In order to test these hypotheses, the rates for each independent variable were collected. The variables were then compared to the dependent variable of homeless rates. The independent variables were then analyzed by the dependent variable through a regression analysis of each. These tests were completed for 42 different counties throughout the United States, and for each of these counties over 3 different years, in order to have a more in depth view of the results over time. We are looking to find a positive correlation from at least the median home and rental prices with homelessness. This information applies to the Finance and Marketing fields, primarily because the housing market is very dependent on financial factors, and marketing of each home is an essential component of real estate. This information could influence further research concerning how homelessness could be combated if it is related to housing price fluctuations.

**Title:** CSD versus Non-CSD Majors Perceptions on Professors with Foreign-Accented Speech  
**Name:** Melissa Soto, Kasey Traylor, Carmen Waugh  
**Mentor(s):** Steven Surrency, Yagmur Seven  
**Program:** Communication Sciences and Disorders  
**Abstract:** A speaker’s accent may influence the listener’s perception of accented speakers’ qualifications. The variation in this perception may result from a number of factors including listener’s experience, knowledge, and interaction with accented speech as well as speakers’ second language level and pronunciation intelligibility. Many American students expecting a professor with the Standard American Accent can provide varying opinions about the qualifications of faculty members with different accents. Communications Science and Disorders (CSD) department offers a number of courses related to accented speech. This study aims to investigate if students in the CSD major have a different perception of professors with foreign-accented speech than their non-CSD counterparts. 40 undergraduate students at the University of South Florida will be surveyed via convenience sampling, 20 from the CSD major and 20 from the non-CSD majors. A student-based survey developed by Trentin (2008) will be used to evaluate CSD versus non-CSD students’ perceptions on the overall ability to understand the course material administered by faculty members with accented speech. It is expected that a t-test analysis will indicate a more positive perception among CSD students comparing to non-CSD students. This study will allow an understanding of the knowledge gained about accents through the CSD major will be substantial enough to cause a difference in perceptions of those with accented speech. Aside from this, the current study can be particularly in the interest of USF faculty members due to USF’s status as a global university.

**Title:** Body Weight Perception and Depression Among College Students  
**Name:** Natalie Soyster  
**Mentor(s):** Marilyn Stern, Jennifer Bleck  
**Program:** College of Arts and Sciences - Cell and Molecular Biology/Psychology  
**Abstract:** Research has shown that body image perception may be a more important factor relating to depression than actual weight status. The objective of this study is to examine both the relation between body image perception and depression as well as actual weight status and depression among college students. Data from the National College Health Assessment during the Fall 2013
Spring 2015 academic years were analyzed (n = 177,822). Self-reported BMI/weight and data pertaining to depressive symptoms/diagnoses were analyzed using chi-squared tests, followed by z-tests for proportions to determine the difference across groups. The highest proportion of accurate weight perceptions across BMI classes was found among obese participants (78.3%), followed by normal weight (76.4%) and underweight (67.6%) participants (p<0.001). There was a significant difference in the rate of depressive symptoms experienced by participants across BMI classes and weight perception categories (deflated – perceiving a lower weight than BMI category, accurate – perceiving a similar weight as BMI category, and inflated – perceiving a higher weight than BMI category). The highest rate of reported depressive symptoms within BMI categories was among underweight participants (37.2%), followed by overweight/obese (35.2%) and normal weight (31.8%) participants (p<0.001). The highest proportion of reported depressive symptoms within weight perception categories was among participants with inflated weight perceptions (39.2%), followed by participants with accurate (33.1%) and deflated (29.6%) weight perceptions (p<0.001).

Results showed that weight perception is strongly related to depression among college students. Interventions targeting weight perception as a factor related to depression should be considered.

**Title:** Isolation of Alcyopterosin Compounds from an Antarctic Coral for Use in Drug Discovery

**Name:** Christian Stanley

**Mentor(s):** Bill Baker, Anne-Claire Limon

**Program:** Biomedical Sciences

**Abstract:** Rising drug-resistance rates have become an inevitable issue in medicine. Innovational procedures in research are pivotal to the discovery of new drugs to combat resistant agents. Natural products have benefited drug discovery research throughout history by providing a rich source of disease-modulating drugs. Marine organisms living in extreme environments like Antarctica are of particular interest for their often-novel chemistry and development of unique secondary metabolites for their defense mechanisms. Corals are sessile marine organisms that develop unique secondary metabolites to avoid predation and indemnify them for their immobility on the ocean floor. These unique secondary metabolites can be further developed as novel drugs for human biological systems. During a 2013 collection trip, an Antarctic coral, Gersemia sp, (NBP13-37), was obtained for study. Through methods of extraction, isolation, purification and elucidation, potentially bioactive compounds within this Antarctic coral have been isolated. Samples from NBP13-37 were freeze-dried before being subjected to multiple rounds of Soxhlet extraction and liquid-liquid partitioning to separate terpenoid compounds. Further purification and analysis via Medium Pressure Liquid Chromatography (MPLC) and High Pressure Liquid Chromatography (HPLC) were performed. Nuclear Magnetic Resonance Spectroscopy (NMR) piloted the advancement of this extraction process towards purity. Future isolates will be subjected to assays to evaluate their activity against resistant pathogens in order to assess their potential use as pharmaceuticals.

**Title:** Meta, para, ortho-azido phenol purification by column chromatography

**Name:** Brooke Stark

**Mentor(s):** Jenin Jedian
Program: Chemistry
Abstract: Phenols are monosubstituted aromatic compounds comprised of a hydroxyl group on the first carbon of the ring. When aminophenol reacts with azide salts in aqueous media, the amino substituent is converted into an azide (\(-\text{N}_3\)). The initial aminophenol’s structure has either an ortho- (1,2), meta- (1,3), or para- (1,4) placement in regards to where the hydroxyl and amino groups are located on the aromatic ring, of which will not change throughout the duration of the reaction. This experiment focuses on the resulting location of the azide substituent on the structure. Column chromatography was utilized to alter the composition of the sample and to purify the compounds based on their polarity. As the compound moves down the column through the stationary and mobile phases, the components are absorbed depending on their absorption ability and are collected separately. Separating the components and removing impurities is imperative in understanding and analyzing the distinct placement of azide on the phenol.

Title: Impact on Student Learning: FSA Prep
Name: Jamie Staudinger
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: District personnel and school administrators place a serious emphasis on standardized testing. Because the stakes are so high, it’s easy for preservice teachers to wonder whether they’ve adequately prepared their students for the annual exams. The guiding question of this study is “What was my impact on student preparedness for the FSA?” This study takes place within the final internship of a Secondary English Education major. The school is located in a largely-populated suburban area. A 10th grade class of 24 practiced for the FSA using three primary strategies: hands-on activities, timed writings, and large-group discussions. The class focused on two separate skill sets and therefore had two separate assessments. For the grammar portion of the unit, students took a pre-quiz and a post-quiz with instruction in between. For the essay-organizing portion of the unit, students submitted two different samples of flash writing. Whole-class results are examined in addition to those of two specific students: a boy who has only spoken once all year and another boy with severe ADHD. The results will show how hands-on activities, timed writings, and large-group discussions impacted students’ preparedness for the FSA.

Title: Human bone marrow CD34+ cell transplantation prevents microhemorrhages in the spinal cord by capillary cell engraftment in symptomatic ALS mice
Name: George Steiner, Ajay Mahendrasah
Mentor(s): Svitlana Garbuzova-Davis
Program: Integrative Animal Biology
Abstract: Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disease characterized by motor neuron damage in the brain and spinal cord. Alterations in the blood-spinal cord barrier (BSCB) may be pathogenic disease elements accelerating motor neuron degeneration. Capillary leakage and rupture have been shown in both ALS patients and animal models of this disease. Repairing BSCB integrity in ALS is therefore a potential therapeutic approach. The aim of this study was to determine the effects of intravenous human bone marrow CD34+(hBM34+) cell transplantation at three different doses into symptomatic G93A SOD1 mice on potential BSCB
repair. Four weeks post-transplant, immunohistochemical analysis was performed on cervical and lumbar spinal cord tissue sections, using anti-human von Willebrand factor antibody, to determine administered cell differentiation and capillary engraftment. Perls’ Prussian blue staining was used to indicate capillary rupture by staining ferric iron in the spinal cord parenchyma. Results showed that all doses of the transplanted hBM34+ cells differentiated into endothelial cells that mainly engrafted into the capillary walls of the high cell dose treated mice. A significant decrease in the number of microhemorrhages within both the grey and white matter of the cervical and lumbar spinal cords was observed primarily in ALS mice receiving the high cell dose compared to the media mice. The differentiation and engraftment of the transplanted hBM34+ cells and the decreased appearance of microhemorrhages demonstrate that transplantation of these cells at optimal dose might have potential as a future therapeutic strategy for BSCB repair in ALS patients. This study was supported by NIH (1R01 NS090962-01) grant.

Title: Labor of Love Middle Class Mothers: Raising Healthy Eaters in a Fast Food Industry
Name: Andrea Straessle
Mentor(s): Jennifer Friedman, Laurel Graham
Program: Sociology
Abstract: Equipped with a vast amount of information and knowledge about healthy food through modern media, new findings in research, books, and television, today’s middle class parents are well informed about the “right” type of food to feed their families. Often the main food providers of the family, “mothers, attend to, engage with and involve themselves in commercial life… into ways of being a mother and of caring for children” (Cook, D.T., 2009). With this constant influx of information and awareness to “do it the right way” the question guiding my research is: How do mothers incorporate and use this arsenal of science to shape their family’s eating practices? As part of the “Managing Family Food Consumption” collaborative research project, I participated in collecting 37 open-ended interviews with parents who are the main food providers within their family and their children when possible, 25 youth (aged 8-15). My findings suggest that 1) many mothers self-educate to maximize “healthy” food choices for their families to minimize the risks of future health problems such as diabetes and high blood pressure, 2) they incorporate a whole host of roles aligned with the “super mom” identity to diagnose and prevent health problems within their households which requires more work, 3) despite extraordinary attempts to create healthy eating practices, there are often fissures in their fortress of food management, which provides ample opportunity for the intrusion of unhealthy food. Health practitioners can benefit by sensitizing themselves to the difficulty of translating scientific discourses on health for today’s busy, stressed, and “on the go” families.

Title: Characterization of Migration Phenotype of Pancreatic Cancer Cell Lines
Name: Enakshi Sunassee
Mentor(s): Heiko Enderling
Program: Chemical Engineering
Abstract: Based on the acid-mediated tumor invasion theory, cancer cell growth is promoted in an acidic environment which is usually toxic to normal cells. Problem investigated: The aim of this project was to investigate the impact of acidic tumor microenvironment on the migration of pancreatic cancer cell lines. Methods: Two cell lines from the same heterogeneous tumor from
mice with Kras, Trp53 mutations (KPC mice) were used: UN-KPC-960 and UN-KPC-961. From pancreatic cancer literature, it is known that UN-KPC-960 represents the less acid producing cell line while UN-KPC-961 depicts the higher glycolytic cell line. The Boyden chamber migration assay was performed separately at an acidic pH of 6.8 and a normal one of 7.4 for both cell lines. Migration trends were determined based on the degree of staining in each pH condition. The extent of migration was compared. Agent-based mathematical models were generated in MATLAB using a series of differential equations to further investigate the behavior of both cell lines separately in each pH conditions. Migration rates from experimental results were used in the simulations. The models were also extended to analyze the tumor growth when both cell lines compete. Results: The results from our experiments and mathematical models show that not only does a normal pH record a slower tumor growth but it also promotes the growth of the less glycolytic-hence less invasive- cell line. Conclusion: Thus, by increasing the pH of the tumor microenvironment-possibly via bicarbonate treatment- we can potentially promote the growth of the less invasive cell line and control pancreatic cancer.

Title: Impact on Student Learning: The Effects of Kinesthetics and Sociability
Name: Victoria Sweeney
Mentor(s): Laura Sabella
Program: Secondary Math Education
Abstract: Students at the middle school level are often disengaged in the traditional classroom setting. Rather than engaging with course work, they instead engage with the opportunities to move, play and talk with their peers, or lack of them. This behavior results in students not learning or performing to the best of their abilities. This study takes place in a fundamental middle school classroom, located in a lower-middle class neighborhood. A class of twenty-three 7th grade gifted students was taught about linear equations and finding slope using multiple activities designed to increase student movement and opportunities to talk with peers: math hunts, inquiry based activities, foldables, and guided practice. A pre-test was given before students began the unit and a post-test was given one week later. Whole-class results will be examined from pre to post-test, in addition to specific attention to one high-performing female student and one low performing male student. The results of this study will show the impact on student learning and whether providing students with opportunities to move and talk will engage them and increase their academic performance.

Title: The Relationship Between Palliative Care, Pain, and Women
Name: Allyson Talaroc
Mentor(s): Lindy Davidson
Program: Biomedical Science
Abstract: Palliative care is a dimensional approach to care and comfort of a patient. It is specialized medical care for people with serious illnesses focused on providing relief from symptoms and stress. Pain is one of the major factors of palliative care, specifically in cancer patients. Research shows women report more about pain than men do. This research project asks, what is the relationship between pain management, palliative care, and women? If there is a need for sex specific treatments, what palliative treatments might be customized for women diagnosed with cancer? This senior honors thesis uses data collected by a psychologist in a cancer research center.
The psychologist conducted two sets of interviews with cancer patients regarding their pain. The interviews were 60-90 days apart. The same questions and pain scale were presented for both. After the data was collected, it was analyzed with SAS/STAT Software. This research examines the relationships between pain, women, and specialized treatment. Future research should examine if the area of pain is specific, if there are differences in cancer types, or if more specialized treatment is needed.

**Title:** Identifying Vulnerable Populations in Hillsborough County to Build Resilience  
**Name:** Kelci Tarascio  
**Mentor(s):** Elizabeth Dunn  
**Program:** Public Health

Abstract: Vulnerability and exposure to disasters is increasing as more people locate to areas of high risk. Identifying factors that define social vulnerability is critical for effective emergency management to reduce exposure of natural hazards through assessment of neighborhoods at risk. Social vulnerability refers to six select factors that determine the resilience of a community and are comprised of household composition, gender, age, socioeconomic status, race, and language barriers. The goal of this research project is to identify vulnerable populations that are most at risk to natural hazards in an effort to develop targeted outreach throughout Hillsborough County. Hillsborough County government discovered a need to develop a Program for Public Information (PPI) based on standards established by the Federal Emergency Management Agency (FEMA) and began working with the University of South Florida to identify strategies for reaching at-risk population. Students conduct research by developing a literature review to identify social factors that create vulnerability. The use of a Geographic Information System (GIS) map identifies neighborhoods with the highest social vulnerability with a layering of the FEMA flood zone map to identify target populations of need. Disaster preparedness and mitigation measures lack the inclusion of addressing the needs of the population and how to effectively reach them. Hillsborough County has a large elderly, minority, and low income population that reside in areas that have experienced repetitive loss from flooding. The development of educational material to increase preparedness among those with high social vulnerability is the next phase of the research project.

**Title:** What You Know When You Don’t Know a Language: Can You Accurately Judge Fluency?  
**Name:** Patricia Claire Tate, Katherine Anderson, Javier Benitez, Karla Black, Ennis Cruz Gonzalez, Ivan Herenchak-Jones, Chelsea Lo, Kara Marin, Althea Mazanowski, Megan Robinson, Daniel Sarmiento, Tyler Sponder  
**Mentor(s):** Amanda Huensch, Addie Sayers China  
**Program:** Psychology

Abstract: This study focused on the perception of fluency—the “movement-like or fluidity aspects of speech” (Segalowitz, 2010, p. 3). Previous research has shown that many factors influence fluency ratings, such as whether the rater is a native speaker or has taken a linguistics course (O’Brien, 2014; Rossiter, 2009). Even when told to ignore aspects such as grammar and vocabulary when judging fluency, raters still report relying on those characteristics (O’Brien, 2014; Rossiter, 2009). Therefore, the current work investigated the rating of fluency by non-
knowers of a language. The research questions explored (1) whether or not knowers and non-knowers of a language can reliably rate a speech sample and (2) whether they focus on similar characteristics when making their ratings. Speech samples of native and non-native speakers of French and Spanish narrating a picture story were played to raters via Qualtrics. Raters were divided into knowers and non-knowers based on a language background questionnaire. After listening to each file, raters were prompted to score the fluency using a sliding scale and provide a comment as to why they scored it so. Raters were instructed to focus solely on aspects of speech such as pauses, speech rate, repetitions, and self-correction. Results of an inter-rater reliability test (Intraclass Correlation Coefficient) demonstrated that both knowers and non-knowers of French and Spanish had moderate to strong agreement across ratings (with similar confidence intervals for all groups). Results suggest that regardless of a person’s knowledge of a language, they are able to reliably rate and identify characteristics associated with fluency and disfluency.

**Title:** Somali Civil War and Discrimination of Disabled  
**Name:** Lyndsey Taylor  
**Mentor(s):** Lindy Davidson  
**Program:** Honors College  
**Abstract:** This research examines how the lives of disabled persons are severely impacted by ongoing civil war in their country. To accomplish this, the study traces the lives of people living within Somalia and Somaliland who have a disability from young childhood to old age. In this way, aspects of birth, education, health care, policies, careers, and marriage are explored asking, how does living within a civil war torn country such as Somalia/ Somaliland impact discrimination of those with disabilities? The research is primarily drawn from news stories, books written about the Somali civil war, and online articles concerned with refugees. Preliminary findings demonstrate that while civil war creates higher percentages of people with disabilities, it leaves them largely forgotten without rights and without a way to escape. It also deserts them with an exponentially more difficult life as the civil war, their disability, their lack of education, and their poverty confound each other.

**Title:** Secondary Structure Adopted by Peptide Sequences in Dragline Spider Silk  
**Name:** Brittany Thiessen  
**Mentor(s):** Geoffrey Gray  
**Program:** Chemistry  
**Abstract:** Spider dragline silk is one of the strongest natural materials known to man, yet despite the many possible applications the secondary structure of the noncrystalline regions is still unclear. To investigate this structure, computer simulations were performed of common repetitive motifs found in most dragline silks in both water (high dielectric, representative of the dope) and octanol (low dielectric, representative of the solid fibrous state). Results indicate that these motifs were generally unstructured in aqueous solvent, while a greater degree of secondary structure was adopted in the low dielectric solvent. Turns and helices were the two most common structural elements. A comparison of calculated and experimentally measured NMR chemical shifts, and possible implications for the silk spinning process will be discussed.
Title: The Relationship between Memory and Auditory Event-Related Potentials in Older Adults

Name: Khadijah Tiamiyu
Mentor(s): Jennifer Lister
Program: Biomedical Sciences and Psychology

Abstract: Mild cognitive impairment (MCI) is conceptualized as a transitional state between normal cognitive function and dementia. Early detection of MCI is one way that we can, ultimately, slow down the progression of neurodegenerative diseases like Alzheimer’s Disease. One promising tool for early detection is the P3b, an auditory event-related potential (ERP) and one of many electroencephalographic (EEG) measures used by audiologists in assessment of auditory function. Individuals with MCI are known to have relatively longer P3b latencies and smaller P3b amplitudes compared to adults with normal cognition. In the present study, the utility of P3b amplitude as a diagnostic tool for memory impairment was assessed. It was hypothesized that P3b amplitude and scores on the Rey Auditory Verbal Learning Test (AVLT), a memory measure, would be significantly and positively correlated among older adults. The P3b amplitude was measured while forty-two participants listened to pure-tone and speech stimuli. Results indicated a significant, positive correlation, $r= 0.486$, $p= 0.001$, between P3b amplitude, measured using speech stimuli, and AVLT scores. These results suggest that ERP measures could serve as a possible, non-invasive, and objective diagnostic tool for detecting early memory decline in older adults. Further research is needed to explore other cognitive domains that may also be significantly associated with P3b amplitude before it is implemented as a diagnostic tool for MCI.

Title: Effects of Color on Memory by Recall and Recognition

Name: Paula Tran, Brooke Dean, Kathiana Dureny, Mikaela Hemenway
Mentor(s): Elizabeth Schotter
Program: Psychology

Abstract: In prior literature, exposure to red enhances performance on detail-oriented tasks, which was associated with recognition memory tasks, and exposure to blue enhances performance on creative tasks, which is associated with recall tasks. We will be comparing the effects of these conditions to the context-dependent memory effect by using a black text condition, simulating similar conditions in both studying and testing environments. The experiment is a 2x3 mixed factorial design, between test type (recall and recognition) and word color (red, blue, black). Test type is manipulated between subjects and color is manipulated within subjects and counterbalanced across three test versions. We expect studying red words will lead to the highest performance on recognition, studying blue words will lead to highest recall performance, and both color conditions will have higher scores than context-dependent memory effects in both test types. If the assumptions above are correct, this would suggest color processing affects memorization and retrieval of information in short-term memory. For different colors, our perception retains and retrieves information using different mental processes. Further research could further analyze color processing in memory across cultures. For instance, observing differences between individualistic and collectivistic cultures.
**Title:** Numismatics of Byzantine Coins  
**Name:** Mahesh Tummala, Mary Aragona, Yameeliz Fret, Nilmar Gonzalez, Ashley Neil  
**Mentor(s):** Michael Decker  
**Program:** Biomedical Science  
**Abstract:** Historians have different methods of analyzing and interpreting data, and their conclusions can be supported or contradicted based on the metadata from different sources of literature. Millions of artifacts have been dug up by archeologists, and through the chemical-archeological examination of tangible artifacts, and have been published. Using specifically data with regards to coins and precious metals, and the application of historical references, the group intended to developed a time-frame for the mass-circulation of money and determine the economic viability of the Byzantine Empire. Data for thirty thousand coins have been collected from various literature, and the coins have been compartmented through different aspects. The issue to address is whether a conclusion can be reached utilizing their method of analysis and the data collected, and when a conclusion is reached, to compare it to already accepted interpretations. Each data coin is part of a big data set which is fixed appropriately and examined using the GIS and Tableau system to find correlations and trends. Once the process is done, it is intended to conduct a statistical and geographical breakdown of the data to propose novel ideas relating to the economics of the Byzantine Empire and determine the relationship between different areas of medieval Europe.

**Title:** The Effects of Praise on Digital Task Performance and Self-Efficacy  
**Name:** Frederick Tutor-New, Mary Falling, Yanel Rios  
**Mentor(s):** Elizabeth Schotter  
**Program:** Biology & Psychology  
**Abstract:** High self-efficacy (i.e., belief in one’s ability to succeed) typically improves motivation (Schunk 2010), which can be increased by praise (Hattie & Timperley, 2007). In a technologically advanced world, many of our daily tasks have replaced human interaction with computer interactions. In addition to limiting social interaction, this may limit opportunities for positive feedback (i.e., praise). However, if the solution to maintaining high motivation in remote (i.e., computer-based) tasks involves including praise, it is important to know what type of praise is most effective in that digital context. To this end, we will compare the effect of praise about the worker’s performance in relation to peers to praise about the workers’ performance in isolation, without comparison to peers. In an online task, participants will view pairs of pictures with several features changed and note what differs between them. They will either receive praise based on social comparison (e.g., “You did better than most people!”) or mastery (e.g., “You got everything correct!”). Afterward, they will report feelings of self-efficacy via the General Self Efficacy Scale (Schwarzer & Jerusalem 1995) with additional custom-designed questions. Reflections on their performance, predictions about their future performance, and reports of their feelings of motivation will also be recorded. We expect positive social comparison feedback will elicit greater feelings of self-efficacy than mastery feedback. If so, socially-based praise may be beneficial in virtual work places or educational environments as technology becomes progressively more integrated into our lives.
Title: The Impact of Foreign Language on the Success in Business
Name: Tristen Utterback
Mentor(s): Sandrine Savona
Program: Finance
Abstract: Across the world today, there is an abundance of different languages used to communicate between people. With these languages, some individuals choose to learn multiple and others never venture past their native tongue. Those individuals that make the decision to learn multiple languages have the potential to gain useful foreign language skills. When examining these skills, many benefits result regarding performance in the education and business fields. The problem with these benefits is that they remain unknown or not fully utilized within the United States of America, due to the differing culture and lack of interest. The purpose of this paper is to determine the extent to which foreign language skills impact the success of students in business classes and professionals in the business world, as well as propose change for American firms to better utilize the language skills of its workers and former students. In order to research this topic, secondary sources will be analyzed and personal interviews conducted. Through this research, it is expected that a variety of business-specific benefits will result from learning foreign languages. However, it is presumed that awareness of these foreign language benefits needs to be spread and the importance of the skills promoted.

Title: Impact on Student Learning: Monitoring Student Progress
Name: Deanna Vaccaro
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: Monitoring each individual student’s learning can be a challenge. It is easy for a teacher to ask the whole group a question, but doing so is not an effective strategy to determine individual student’s progress. In Florida, student teachers are required to ask the question, “What is my impact on student learning?” as a part of his/her final internship experience. This study takes place in the final internship of a Secondary English Education major’s 11th grade English Honors class at a high performing, high achieving high school in the eighth largest school district in America. A class of 24 students was taught how to write a personal, reflective essay using three teaching strategies to monitor student’s learning: supervising/circulating while students are writing, initiating interaction with each student rather than waiting for him/her to ask questions, and one-on-one writing conferences to supply students with feedback during the writing process. A pre-assessment was administered in the form of a baseline-writing sample and a post-assessment of applying the essay structure was administered after the skill set was taught. Whole class results are examined for pre- and post- assessments. Further, the results of two students are compared; one is a high performing female student, and the other, is a low-performing male student. The results will show the impact on student learning and whether the three activities were effective in monitoring student’s progress to ensure growth on the overall learning of a personal, reflective essay as revealed through scores from pre- to post- assessment results.

Title: Exploring Patient Provider Communication Among Young Adults in a Southeastern Metropolitan University
Name: Preeti Vadlamani
Mentor(s): Stephanie Marhefka, DeAnne Turner, Rachel Logan
Program: Biomedical Sciences

Abstract: Health providers may play a vital role in influencing the reproductive and sexual behaviors of young adults – for example, they may promote family planning, birth control use, and sexually transmitted infection (STI) prevention; however, this influence may differ based upon gender. To better understand these gender differences, this study examined the perceptions held by young adults regarding interactions about sexual and reproductive health with their providers. Participants (N=180) were recruited from undergraduate classes at University of South Florida and eligible participants completed a quantitative survey on Qualtrics. Chi-square analysis was performed using SPSSv24. Gender was associated with visiting a provider - with more females than males visiting a provider within the past year (p =0.001). Participant gender was significantly associated with provider gender, where females were more likely to visit female providers and males more likely to visit male providers (p=0.000). Females were more likely to have had conversions with their provider about several reproductive and sexual health topics than their male counterparts, specifically about: intentions to have children now or in the future (p=0.007), STIs (p=0.049), birth control (p=0.000), and specific ways of preventing pregnancy (p=0.001). While providers are having conversations about reproductive and sexual health with females, they are not discussing these topics with males. Discussing topics such as pregnancy intentions, STIs, and preventing pregnancy are important regardless of gender. Health providers should be more open to discussing reproductive and sexual health with young adult males, as this may help to influence their attitudes toward reproductive and sexual health.

Title: Impact on Student Learning
Name: Andre Vaquero
Mentor(s): Laura Sabella
Program: Math Education

Abstract: Education and the school system play a fundamental role in establishing members of society. Individuals largely benefit from their experiences within the school system. The benefit derived from their time within their schooling experience is subjective to the effort placed by the individual and resources, as well as support, provided to the individual. From my experiences I have found that students educational experience has somewhat of a snowball effect. Meaning, students who do well, get progressively better, while students who are behind, get progressively more behind. This issue is expounded and manifests itself in the form of classrooms with heterogeneous skills and individual students who are at a disadvantage from the first day of instruction. I aim to examine the impact on student learning by properly differentiating instruction and accurately scaffolding knowledge to bridge student schema. The impact on student learning will be examined across a 5-day unit. The unit will discuss topics regarding the graph of rational functions. To appropriately scaffold student learning, a day of instruction will be dedicated solely to reviewing and strengthening fundamental skills for students’ fluid success in the unit. The impact on student learning will be measured by collecting data on student’s knowledge before and after instruction in the form of a pre- and post-assessment. Specific attention has been paid to two students. Both students are female but have varying demographics and backgrounds. The results of the study will identify the impact on study learning and isolate the effects and advantages of deeper scaffolding.
Title: A Systematic Literature Review of the Correlation between Cigarette Smoking and Cognitive Decline
Name: Lorena Walker
Mentor(s): Ross Andel, Nasreen Sadeq
Program: Cell and Molecular Biology
Abstract: Cigarette smoking has been identified as a risk factor for several diseases such as lung cancer, atherosclerosis, etc. However, it has not received much attention in the field of cognitive function. Cigarette smoking can tighten and constrict blood vessels that supply oxygen to the brain, suggesting that it is possible for cigarette smoking to affect cognition by reducing oxygen transmission to the brain over time. This possibility is important since the baby boomer cohort is starting to reach the category of older adults in our population. The baby boomer cohort’s adolescent years coincided with the peak of tobacco use in America. If cigarette smoking negatively affects cognition, then this could be a significant factor in cognitive decline seen in older adults from this cohort. The purpose of this study was to review literature regarding the relationship between cigarette smoking and cognition, with regards to older adults who were current smokers, past smokers, and never smokers. Throughout the literature, two main conclusions can be drawn. The first is that being an older adult who is currently smoking is associated with a 40-80% greater risk of developing cognitive deficits when compared to being a former smoker or never smoker. Second, being a former smoker or never smoker is not associated with adverse effects on cognitive function.

Title: The Migration of the Birds and the Bees: A content Analysis of the Evolution of Sexual Education Videos- U.S. vs U.K.
Name: Kimberly Weikel, Rachel Llewellyn
Mentor(s): Lindy Davidson
Program: Health Science
Abstract: In the 1970’s, rising unintended teen pregnancy rates and an increase in sexually transmitted infection rates amongst teenagers ages 15-19 in the United States led to widespread support of sexual education in public schools (Guttmacher Institute, 2016). However, currently in the U.S. only 23 states mandate sexual education as part of school curriculum (Guttmacher Institute, 2016). As a result of the growing need for an encompassing education curriculum, sexual education transitioned from the abstinence based approach to a more comprehensive education program. In the United Kingdom, similar increases in teen pregnancy and STI rates amongst teens led health officials to place a greater emphasis on comprehensive sexual and relationship education (SRE) in secondary schools (Fletcher, 2015). For the current analysis, sexual education videos from 1950-2017 targeted towards teenagers from both regions were assessed for the presence of the following variables: contraceptives, teen pregnancy prevention, STIs, and sexual consent. Each video was evaluated for its extent of comprehensiveness. This will facilitate the determination of whether or not sexual education videos have become more comprehensive over the evaluated time period. In addition, the U.S. has seen a decline in teen birth rates since 2007 (CDC, 2015). In the UK, teen birth rates declined 13.3% between the years 1998-2008 (Sexual Health Direct Fact Sheet, 2011). It is important to analyze the transition of sex education to see if the shift corresponds with a greater understanding of sexual behavior, therefore, possibly paralleling the decrease in teen
pregnancy rates, and decrease in teen STI rates.

**Title:** Breaking into a Niche Market: A Business Plan for a VR Racing Simulator Company  
**Name:** Dakota Whaley  
**Mentor(s):** Richard Plank  
**Program:** Accounting  

Abstract: As a business honors student, a personal goal is to understand how a company develops while defying odds. That is why the aim for this thesis is to create a business plan which highlights how a company needs to be organized – and which strategies must be present – to break into a niche market and remain profitable. The company seeks to sell racing simulator cockpits with a virtual reality component and a heavy marketing front. This company has been chosen because the growing virtual reality market will help give the niche racing cockpit product an edge and build popularity. The main approach was to gather data on the growth of the virtual reality and racing cockpit markets, as well as manufacturing and shipping data. Additional information gathered includes approaches for business plans, financial statements, and business structures. This information was used to create a set of projected financial statements, a marketing strategy, and a business plan with the intent of obtaining funds. If proper funding can be gathered, it is currently expected that the company will be profitable in the long run. The company must pursue social media as a primary marketing channel, and the product must be low cost to the consumers. The company will ultimately see success due to the ever-expanding virtual reality market. Overall, this thesis is informative for people who are interested in studying how small businesses develop. This thesis also introduces a strategic mindset in terms of how the company should position itself in the market.

**Title:** Differential symptomology of sickle cell trait football players is significantly associated with SNPs at the beta-globin gene cluster, HBS1L-MYB intergenic interval, and BCL11a and G6PD genes.  
**Name:** Deandre White  
**Mentor(s):** Lorena Madrigal  
**Program:** Biomedical Sciences  

Abstract: Since the 1970s there have been reported cases of athletes dying from rapid deterioration after intense physical activity. These athletes had sickle cell trait. Because there is a population of sickle cell trait (SCT) individuals who have an increased risk of exercise-induced complications, we tested the hypothesis that genetic modifiers may have significant associations with at least some SCT athletes experiencing exercise-induced problems. The objective of the study was to determine if genetic modifiers were linked to the varying symptoms of SCT football players. We used SNPs that were formerly found to affect phenotypic variance of HbF levels of SCD patients in previous studies. We also used G6PD markers in our sample given that G6PD deficiency relates to sickle cell disease as another anti-malarial condition as well as its encoded enzyme that produces glutathione which limits oxidative damage and thus exertional sickling. Our sample consists of 29 players collected from NCAA division I, II, and III teams. Written surveys were collected from each participant with questions regarding their hydration levels, ethnic backgrounds and descriptions of their symptoms after exertion periods. Each subject also provided a cotton cheek swab for DNA sampling. Each participant was assigned a risk level by two
clinicians who had no knowledge of the participants’ genetic markers. We found significant associations between specific SNPs and symptoms confirming that a football player’s differential symptomology could be significantly associated with genetic modifiers that affect their HbF levels and G6PD enzyme production.

**Title:** The Fourth Estate: Facts of the Matter  
**Name:** Ashleigh White  
**Mentor(s):** Janelle Applequist  
**Program:** Mass Communications  
Abstract: The Fourth Estate, news media, has emerged as a source of discontent for Americans. This has specifically come to light through the 2016 US presidential election. In 1976, 72 percent of Americans trusted the media, yet now less than a third of Americans feel that they have a “great deal” or “fair amount” of trust in mass media. (Gallup, 2016) I hypothesize that the concepts of truth and fact may differ in terms of mass media outlets and their publics because of the language used. The research conducted will analyze the degree to which broadcast news outlets portray this consensus and whether there is an ensuing “selective” viewership from Americans. Television programming of three major news networks was linguistically analyzed through software, from March 18-20, for “emotional” word choice. This study, over time, should find that there is a perceivable difference in how news is reported to viewers through language choice either as positive or negative. This conclusion will be further explored to explain the relationship between consumers and outlets, with hopes to answer whether it is the responsibility of the fourth estate to present truth or fact, or if it is the role of the reader to not engage in selective viewership based on partisan values. These distinctions will help society consume news responsibly and be more accurately informed or educated on societal issues, as well as, help the “the press” regain trust.

**Title:** Adapting a Classical Myth in the Style of Marie de France’s "Lais"  
**Name:** Annemarie Whitehurst  
**Mentor(s):** Nicole Discenza  
**Program:** English/Literary Studies  
Abstract: The Lais of Marie de France relate poetic romances addressing unconventional aspects and concerns of love experienced by the aristocracy around the late twelfth century. Regardless of societal norms, these stories center on brave knights, mysterious women, and fantastic events, yet fail to include the idea of unrequited love. For my project, I wrote an original poem in the style of Marie’s Lais as an adaptation of the classical myth of Diana and Actaeon, written by the Roman poet Ovid, discussing this theme. The goal of this project was to better identify Marie’s narrative and stylistic features, ultimately gaining an intimate understanding of her works to share with other readers. My piece, entitled “Devi,” utilizes the knowledge of Marie’s familiarity with Ovid, centering on the medieval practice of the hunt, also alluding to classical symbolism. In addition, my project includes an analysis of Marie’s language, tone, vocabulary, and patterns, which I have attempted to closely imitate. In my own creative work, I focused on emulating Marie’s stories Guigemar, Lanval, and Eliduc, including magical elements, historical and cultural background, and religious significance. The success of this project can be seen in my ability to move beyond a formulaic construction of a lai, instead providing readers with an intellectual and emotional experience comparable to reading Marie’s masterpieces. This demonstrates that the issue of
unrequited love, although unexplored by Marie herself, is nonetheless a plausible topic for the time, while showing major cultural connections between medieval beliefs and their roots in classical society.

**Title:** The Carrot, The Stick, and Multifaceted Employee Incentives: How Businesses Can Motivate College-Level Employees  
**Name:** Stefan Whiting  
**Mentor(s):** Charles Michaels  
**Program:** Business Management

Abstract: Many students coming out of college and applying to jobs today have a multitude of opportunities presented to them. Though this is a great benefit, many are unsure of which company to go with and only 18% of millennials expect to stay with their employer long term. I propose that this is due to a lack of motivating factors on the part of the company. Companies seem to misunderstand how to properly motivate their employees and prevent employee turnover. Various political, social, and economic climates have major impact in how each generation thinks and reacts to certain motivational influences. When Generation X entered the workforce, managers assumed that they would view the workplace the same as Baby Boomers did and implemented the same motivational tactics such as rewarding service with money, much to their downfall. Because of this there was high turnover and low retention among Generation X. Managers today are making similar mistakes with millennials. They are using the same reward system of money, bonuses, and promotional opportunities to try and retain the millennial worker. This information outlines the background for my proposal and extensive literature review on how businesses can motivate the college level employee. The Pew Research Center estimates that 54 million people born after 1982 will account for about 34% of the labor force in the U.S. by 2024 and about 50% of the labor force worldwide by 2020. The literature review involved a careful meta-analysis on surveys done by PricewaterhouseCoopers on current motivational practices and the upbringings and personalities of the millennial generation. I intend to implement my own survey based on a smaller sample size of college students in the Tampa area. Questions will seek to determine the interests of millennials in pursuing factors such as a better work/life balance, a preference for challenging rather than repetitive tasks, and a desire for a clear vision as to the direction of the company.

**Title:** The Economic Viability and Desirability of Implementing Kite-Propulsion in Transoceanic Voyages  
**Name:** Nicklas Wihlborg  
**Mentor(s):** Michael Cross, Sharon Hanna-West  
**Program:** Environmental Biology

Abstract: Every year, the shipping industry is accountable for approximately 4% of the global greenhouse gas emissions. This percentage is expected to triple within the next three decades, as well as being closely related to over 50000 deaths annually. The purpose of this research is to achieve a greater understanding of the market for a kite-traction alternative in the shipping industry, and to determine the required efficiency/cost-threshold. Utilizing the convenience and traction-efficiency of a kite, it is possible to be propelled without altering the overall carrying capacity or maneuverability of the vessel. The jet streams, between 10 – 20 km above sea level, contain more than 100 times the current energy demand in the world today. Based upon current
research and developments, the fuel-consumption for trans-oceanic voyages can be increased by more than 20%. Since the fuel consumption is a substantial part of the vessels’ running costs, a company that is using kites will be able to vastly decrease/reallocate their expenses. Rather than extracting the scarce resources of nature, companies are gradually transitioning into sustainable energy. Since the wind is not a physical/limited product, once the kite is installed and flying, the benefits will exceed the running costs. Today, the shipping industry is important and regarded as the most efficient method for transporting vast quantities of cargo between continents. Utilizing kite-traction as a complement to current propulsion techniques, will not only benefit the companies, but lives will be saved and a sustainable world will be one step closer.

**Title:** The Correlation Between Having Children with Down Syndrome and the Quality of Life of Parents in the Philippines  
**Name:** Shawntel Williams  
**Mentor(s):** Lindy Davidson  
**Program:** Biomedical Sciences and Sociology  
**Abstract:** With a child born with Down Syndrome every four hours, the Philippines has faced several issues addressing the needs of these individuals and their family members. Approximately 1 in 800 Filipino children have the genetic disorder, which consequently affects the quality of life that family members experience as they commit to taking care of the child (Punay, 2015). This research investigates the impacts of having a child with Down Syndrome on the quality of life of Filipino parents and the extent that these factors are addressed within the community. This research has been completed through a thorough review of literature that exists about Down syndrome in the Philippines, with a concentration on the stresses placed on the family unit, as well as relevant interviews with families living in the Philippines that have a child with Down Syndrome. There is an expectation that the quality of life and overall health of families with special needs decreases to a certain degree. This research aims to qualify this expectation with statistics, stories, and a supportive conclusion about the extent to which having children with Down Syndrome affects Filipino parents. For this research to be of merit and relevance, a brief overview of what the average Filipino family, without the need to care for a member with Down Syndrome, experiences is vital as it will provide a point of comparison for the data presented. This research hopes to shed insight on existing policies addressing the needs of children with Down syndrome and their families.

**Title:** How Germany is Combating Climate Change  
**Name:** Zachary Winters, Luke Biggs, Jordan Gott  
**Mentor(s):** Peter Funke  
**Program:** Honors College  
**Abstract:** Rising sea levels, extreme heat events and storms, and rising levels of greenhouse gases. The effects of climate change are devastating and if left unchecked, could lead to an end to life as we and other earthly inhabitants know it. Climate change is an issue that people around the world hear about yet many countries are doing little to nothing in the way of slowing down the damage. Although experiencing the effects of this global dilemma like all other countries, Germany has been labelled as one of the world’s leading nations in reducing the effects of climate change, with a record 74% of their energy coming from renewable energy sources. Our project focuses on what
steps Germany is taking to combat climate change, such as what “green” infrastructure has been
established, and how the country is taking care of its waste products, for example. In order to
research what makes Germany a leader in renewable energy and cleaner living, our group has used
a variety of international publications on the efforts of Germany has implemented to combat
climate change. It is hoped that by understanding the policies put into place by the German people,
other nations can utilize these methods and being working in earnest towards a greener Earth and
a safer future.

Title: Mathematical Modeling for Predicting Outcomes in Warfare
Name: Erinn Wolf
Mentor(s): Razvan Teodorescu
Program: Pure Mathematics
Abstract: The mathematical modeling of warfare has been traditionally based on the Lanchester
system of differential equations, which is a type of predator-prey deterministic dynamical system.
It can predict the outcome of a conflict based on the complete knowledge of the relative
size/strength of opponents’ assets (troops, equipment). Incorporating stochastic effects into such
models (to account for incomplete information) turns them into stochastic differential equations,
whose analysis require a different theory and set of methods. It would be useful to extend this
stochastic differential equation approach to the case of modern cyber warfare, for which
randomness and incomplete information are dominant features. In this thesis, I will investigate the
modeling of cyber warfare, studying the applicability of existing models and their possible
extensions, from both analytical and computational perspectives.

Title: Chemical Leaching of Spent Li-ion Batteries with Weak Organic Acids
Name: Jasmine Wood
Mentor(s): Jeffrey Cunningham
Program: Chemical Engineering
Abstract: Every year, billions of batteries power devices such as cell phones and medical
equipment – in fact, the demand for electric car batteries has recently surged. Both cobalt and
lithium are metals that comprise the cathode material of rechargeable batteries Li-ion batteries
(LiCoO2). A bioleaching process has been proposed to recover Li and Co from spent batteries
utilizing weak organic acids produced by filamentous fungi. This project aimed to assess the
effectiveness of leaching Li and Co with+O302 organic acids concentrations similar to those
produced in fungal processes. The secondary objective was to determine if a treatment with 2%
hydrogen peroxide would significantly increase cobalt recovery in an organic acid leaching
process with spent Li-ion batteries. In the experiment, 14 flasks (organic acid mixtures) were kept
at 25 ºC while shaking approximately at a rate of 120 rpm; samples were collected every 48 hours
and analyzed via atomic absorption spectroscopy. After 10 days, preliminary results indicate that
2 organic acid mixes exhibited the greatest recovery efficiency for Li and Co: Mix 5 and Mix 6,
respectively. In synopsis, Mix 5 (100 mM oxalic and 20 mM citric) caused the greatest theoretical
lithium recovery at 37.07%. Moreover, Mix 6 (10 mM oxalic acid and 100 mM citric acid) caused
the greatest theoretical cobalt recovery at 14.89%. In future experiments, hydrogen peroxide will
be added to these mixed organic acid solutions to investigate whether the presence of hydrogen
peroxide will significantly increase metallic recovery. These results are indicative of an
Every year, billions of batteries power devices such as cell phones and medical equipment – in fact, the demand for electric car batteries has recently surged. Both cobalt and lithium are metals that comprise the cathode material of rechargeable batteries Li-ion batteries (LiCoO2). A bioleaching process has been proposed to recover Li and Co from spent batteries utilizing weak organic acids produced by filamentous fungi. This project aimed to assess the effectiveness of leaching Li and Co with organic acids concentrations similar to those produced in fungal processes. The secondary objective was to determine if a treatment with 2% hydrogen peroxide would significantly increase cobalt recovery in an organic acid leaching process with spent Li-ion batteries. In the experiment, 14 flasks (organic acid mixtures) were kept at 25 °C while shaking approximately at a rate of 120 rpm; samples were collected every 48 hours and analyzed via atomic absorption spectroscopy. After 10 days, preliminary results indicate that 2 organic acid mixes exhibited the greatest recovery efficiency for Li and Co: Mix 5 and Mix 6, respectively. In synopsis, Mix 5 (100 mM oxalic and 20 mM citric) caused the greatest theoretical lithium recovery at 37.07%. Moreover, Mix 6 (10 mM oxalic acid and 100 mM citric acid) caused the greatest theoretical cobalt recovery at 14.89%. In future experiments, hydrogen peroxide will be added to these mixed organic acid solutions to investigate whether the presence of hydrogen peroxide will significantly increase metallic recovery.

Title: Impact on Student Learning: Impacting Vocabulary Analysis
Name: Jacqueline Wotasek
Mentor(s): Laura Sabella
Program: Secondary English Education
Abstract: There is a sudden absence in high-level vocabulary when entering a high school classroom. Students are not able to meet standards in comprehension because their vocabulary is not where it should be. It is even more difficult when students are looking at something that is not modern and requires different word choice than what would be used now. This study will be conducted in an 11th grade English 3 course as they read Lorraine Hansberry’s A Raisin in the Sun. A class of 26 students are experiencing a growth in vocabulary through multiple forms of vocabulary practice. They will partake in using context clues along with schema to find definitions, research a word and present it to their classmates, and they will write letters as a character from the play using the vocabulary words. The growth will be measured through a pre-test and followed up with a post test. This analysis occurred over the course of two weeks and results were yielded for the whole class. There will also be a comparison of two students in the class; one ELL girl from Puerto Rico and a boy with that has not met the standards for standardized testing. The results will show what knowledge students have now gained and constructed about these vocabulary words. Through the different activities there should be an overall growth of knowledge between the pre-test and post test results.

Title: Synthesis of Anti-Malarial Agents
Name: Christian Yang
Mentor(s): James Leahy
Program: Chemistry
Abstract: Malaria is a mosquito-borne disease that is caused by protozoan parasites of the
Plasmodium genus. Symptoms include chills, fevers, headaches, nausea, and weakness. Currently, it is the fourth leading cause of death in the world due to the fact that it caused about 2700 deaths per day, eventually causing more than 1 million deaths per year. Malaria is also very prevalent in countries that are less developed. During the malaria life cycle, two hosts are included, which would be the mosquito and the mammal. The mature sexual stage of the parasite, also known as the gametocytes, are only found in the infected mammalian hosts. Gametogenesis and the formation of diploid zygotes actually occur in the gut lumen of infected mosquitoes. A tryptophan metabolite, Xanthurenic acid (XA), is also found within the mosquito gut, which has been shown to be the trigger that induces gametogenesis. However, there have been reports where XA induced exflagellation is capable of being mediated through the activation of the parasite cGMP signaling pathway. The goal of preventing the transmission of malaria and determination of the biological mechanism that is responsible for this chemical signaling pathway using XA as well as other analogs is reported here.

**Title: Stacking Stones: An Autoethnography on Bereavement and Grief**
**Name: Farrah Youn**
**Mentor(s): Alyse Keller**
**Program: Communication**
**Abstract:** The purpose of this research is to explore my bereavement after the sudden passing of my older brother. This research was conducted through narrative inquiry (Trahar, 2009) as a form of qualitative research. This was a process of autoethnography (Ellis, Adams & Bochner, 2011) to self-analyze a transformative period brought on by the death of a loved one. The focus lies on the transformation of myself, and I used the method of writing in first-person narrative to allow for expression and reflexivity (Humphreys, 2005). I used an episodic format to highlight specific events that represented the stages of grief I had experienced. Included is a self-reflection of the writing process and how the writing itself acted as a transformative episode. This research serves as a description of how grief is unique to an individual. It is an example of how life presents us with challenges and how we grow from these experiences.

**Title: The Role of Baby Boxes in Lowering Infant Mortality Rate**
**Name: Shahrzad Zamani**
**Mentor(s): Sabrina Luke**
**Program: Public Health**
**Abstract:** Background: Infant Mortality Rate (IMR) is the number of infant deaths within the first year of life for every 1,000 live births which is a strong indicator of community health. United States has a significantly higher IMR compared to other developed countries; in contrast, Finland has the lowest IMR among all countries for the past decade. One of the reasons Finland has been keeping the newborns healthy is through community support. Since the 1930s, Finland has given new parent(s) special Baby Boxes that contain newborn essentials and can serve as infant beds. In the U.S., New Jersey has recently implemented free access to the same resource which is estimated to help decrease the IMR. Thesis: This exploratory research aims to gain familiarity with the application of Baby Boxes and acquire new insight into their impact in lowering the IMR in the U.S. Method: Conducting comparative study by analyzing literature and data from Finland and other European countries and assessing future data from the state of New Jersey to measure the
efficacy of Baby Boxes and reviewing the similarities between the two regions. Results: It is estimated that Baby Boxes will lower the Sudden Infant Death Syndrome (SIDS) and overall IMR by providing essentials and education to new parent(s). Conclusion: Baby Boxes proven to be effective in raising healthy infants by combining resources and education. Future implications of this study are toward promoting the topic in the U.S. based on the New Jersey’s experience as a model for other states.

**Title:** The Destructive Effects of Releasing Helium Filled Balloons on the Environment  
**Name:** Shahrzad Zamani  
**Mentor(s):** Marie Bourgeois  
**Program:** Public Health  

Abstract: Countless balloons are released around the world every day. When a balloon is let go, it will blow away, only to burst or deflate and return to pollute the Earth. Balloons can travel thousands of miles, polluting the most remote & pristine places. Once they do, they will remain in that environment for a long time. Balloons are non-biodegradable, air, water, and soil pollutants, and mistaken for food by a variety of species. The purpose of this research is to determine the degree which released balloons negatively impact the environment. Qualitative analysis of several published articles and data tables that address the pollution caused by released balloons. Upon gathering information on this topic, a comparative study between states with laws prohibiting balloon release and those who do not was conducted. Many people simply do not know how destructive balloons are to the environment. Pollution caused by released balloons is a serious environmental issue. It is a threat to many ecosystems which also effect the health of human populations. The best way to reduce the number of released balloons is through education. Suggesting alternative celebration decorations that are easy to obtain and cost-effective can lower the number of released balloons. Informing the population about the destructive effects of released balloons helps them decide in favor of the environment.

**Title:** Role of peripheral inflammation on TDP-43 induced pathology  
**Name:** Frank Zamudio, Corbin Rodier  
**Mentor(s):** Maj-Linda Selenica  
**Program:** Chemistry  

Abstract: TDP-43 has been identified as the major pathological protein in sporadic ALS and in the most common pathological subtype of FTD, frontotemporal lobar degeneration with ubiquitinated inclusions, however how this protein exerts neurodegeneration remains unclear. Some studies have shown that TDP-43 is involved in RNA regulation of cytokines and chemokines such TNFα and IL6. In order to further investigate the role of TDP-43 in regulation of the inflammatory response and vice versa, we induced peripheral inflammation using E. coli lipopolysaccharide in a TDP-43 overexpressing model and began profiling changes in behavior, inflammatory molecules, and kinases. We found that TDP-43 and inflammation synergized to impair cortical hippocampal dependent memory and learning through neurotoxicity. These changes may be due to nucleocytoplasmic shuttling of TDP-43 that is cell-type dependent, in addition to microglial or astrocytic mediated toxicity of neurons.
Title: Improving Student and Teacher Self-Efficacy through Culturally Responsive Teaching
Name: Kaitlynn Zitnyar
Mentor(s): Joy Broughton
Program: Exceptional Student Education

Abstract: Culturally Responsive Teaching (CRT) is when teachers incorporate students’ personal backgrounds and experiences to help students learn (Ladson-Billings, 1994). One purpose of CRT is increasing student self-efficacy (Principe, 2015). While some teacher training programs include courses on multicultural education, the use of CRT practices in schools has not been widely adopted. Therefore, teachers often have low self-efficacy with CRT (Kea, 2013). In this study, I was interested in investigating my own self-efficacy with using culturally responsive pedagogy in the classroom and whether it would improve student self-efficacy with reading tasks. Over a period of six weeks, I designed reading lesson plans using the tenets of culturally-responsive teaching. Data were collected from a variety of sources including checklists for teaching practices for assessing myself, a self-rating system for my students, and my reflective journal. The data were used as a progress monitoring tool to improve my design of instruction. Results examined domains of student and teacher self-efficacy. First, on average student self-rating of overall confidence with academic tasks improved with the use of high-interest tasks. Second, utilizing self-rating systems to monitor my self-efficacy, improved my fidelity of implementation of CRT practices. In conclusion, this study adds to the broader research body on CRT practices by providing evidence that CRT practices supports self-efficacy in students. In addition, inquiry research in teaching supports pre-service teachers in developing self-efficacy with a complex framework such as CRT. Further research is needed on the role of self-rating systems in building student confidence during small-group reading instruction.
What students are saying
About UR at USF

“Without the OUR I would not be able to understand the foundations of what research is, and how to start. They were not only the starting point, but also a support from then to every step in the way.” – Chemistry major

“After attending the Getting Started in Undergraduate Research Workshop I felt encouraged enough to apply for research positions. Knowing that the OUR is available to help me through the process gives me the confidence I need to begin networking.” - Microbiology major

“The OUR, in my opinion, is an invaluable source for helping students not only get into research positions but also teaching skills that will be needed in the future regardless of one’s career.” – Biomedical Sciences major

“Before speaking with OUR staff, I did not even know that undergraduate research was expected of me, or how beneficial it would be for my career.” - Humanities major
OUR Scholarships & Awards
CREATTE Scholars Program

The CREATTE Scholars Program (Creating Research Experiences and Activities through Teaching Enhancement) provides “seed” funding to faculty who integrate undergraduate research experiences into a structured course. Since 2012, nearly 100 faculty scholars and more than 1,000 students have participated in the CREATTE program.

<table>
<thead>
<tr>
<th>Faculty Scholars</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kristen Allukian</td>
<td>English</td>
</tr>
<tr>
<td>Roger Boothroyd</td>
<td>Behavioral &amp; Community Sciences</td>
</tr>
<tr>
<td>Marie Bourgeois</td>
<td>Public Health</td>
</tr>
<tr>
<td>Jennifer Bugos</td>
<td>Music</td>
</tr>
<tr>
<td>Michael Heyes</td>
<td>Religious Studies</td>
</tr>
<tr>
<td>Amanda Huensch</td>
<td>World Languages</td>
</tr>
<tr>
<td>Amber Gum</td>
<td>Behavioral &amp; Community Sciences</td>
</tr>
<tr>
<td>Elizabeth Schotter</td>
<td>Psychology</td>
</tr>
<tr>
<td>Steven Surrency</td>
<td>Communication Science &amp; Disorders</td>
</tr>
</tbody>
</table>
2016 Research in Arts Scholarship

The OUR supports various funding initiatives to enhance student participation and productivity in mentored research and creative activities projects. Detailed information about each initiative can be found on the OUR website: lib.usf.edu/undergraduate-research/travel-funding/

Research in Arts Scholarship

The Research in Arts Scholarship (RIAS) represents a creative partnership between the USF Office for Undergraduate Research (OUR) and the College of the Arts, which aims to foster student passion for inquiry and discovery. Two essential elements comprise the RIAS Scholarship: financial support, and comprehensive training in research skills and professional development. Under the direction of faculty mentors and OUR Program Directors, RIAS Scholars who participate in the USF School of Art and Art History’s Summer Study Abroad Paris Program develop and produce research-based art projects from idea to installation.
THE OFFICE FOR UNDERGRADUATE RESEARCH WOULD LIKE TO SAY “THANK YOU” TO THE FOLLOWING INDIVIDUALS
<table>
<thead>
<tr>
<th>Faculty Mentors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hussien Abdulwafi</td>
</tr>
<tr>
<td>Jessie Adams</td>
</tr>
<tr>
<td>Vonzell Agosto</td>
</tr>
<tr>
<td>Esra Akin-Kivanç</td>
</tr>
<tr>
<td>Kristin Allukian</td>
</tr>
<tr>
<td>Ross Andel</td>
</tr>
<tr>
<td>Janelle Applequist</td>
</tr>
<tr>
<td>Alexia Athienitis</td>
</tr>
<tr>
<td>Zachary Atlas</td>
</tr>
<tr>
<td>Ibrahim Azad</td>
</tr>
<tr>
<td>Roberta Baer</td>
</tr>
<tr>
<td>Bill Baker</td>
</tr>
<tr>
<td>Joshua Barton</td>
</tr>
<tr>
<td>Chantale Begin</td>
</tr>
<tr>
<td>Susan Bell</td>
</tr>
<tr>
<td>Catherine Bénéteau</td>
</tr>
<tr>
<td>Kyna Betancourt</td>
</tr>
<tr>
<td>Venkat Bhethanabotla</td>
</tr>
<tr>
<td>Laura Blair</td>
</tr>
<tr>
<td>George Blanck</td>
</tr>
<tr>
<td>Jennifer Bleck</td>
</tr>
<tr>
<td>Sarah Bloom</td>
</tr>
<tr>
<td>Leah Boepple</td>
</tr>
<tr>
<td>Roger Boothroyd</td>
</tr>
<tr>
<td>Marie Bourgeois</td>
</tr>
<tr>
<td>Patrice Boyer</td>
</tr>
<tr>
<td>William Brazelle</td>
</tr>
<tr>
<td>Maria Brea-Spahn</td>
</tr>
<tr>
<td>Elliot Brecht</td>
</tr>
<tr>
<td>Pamela Brekka</td>
</tr>
<tr>
<td>Jen Bright</td>
</tr>
<tr>
<td>Joy Broughton</td>
</tr>
</tbody>
</table>
### Faculty Advisory Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Department/College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judith Bryant</td>
<td>Department of Psychology</td>
</tr>
<tr>
<td>Jennifer Bugos</td>
<td>School of Music</td>
</tr>
<tr>
<td>Ryan Carney</td>
<td>Department of Integrative Biology</td>
</tr>
<tr>
<td>Jennifer Jacobs</td>
<td>College of Education</td>
</tr>
<tr>
<td>Scott Kluksdahl</td>
<td>School of Music</td>
</tr>
<tr>
<td>Zhan Liang</td>
<td>College of Nursing</td>
</tr>
<tr>
<td>Laura Sabella</td>
<td>College of Education</td>
</tr>
<tr>
<td>Loren Sackett</td>
<td>Department of Integrative Biology</td>
</tr>
<tr>
<td>Atsuko Sakai</td>
<td>Honors College</td>
</tr>
<tr>
<td>Noel Smith</td>
<td>Institute for Research in Art</td>
</tr>
<tr>
<td>Kerry Walsh</td>
<td>College of Business</td>
</tr>
<tr>
<td>Facilitators</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Cristina Abarno</td>
<td>Dawn Harding</td>
</tr>
<tr>
<td>Timothy Adams</td>
<td>Sarah Wray</td>
</tr>
<tr>
<td>Jessie Adams</td>
<td>Elizabeth Yancey</td>
</tr>
<tr>
<td>Adhwaa Alahmari</td>
<td>Evan Zapf</td>
</tr>
<tr>
<td>Peggy Allen</td>
<td>Jane Harvey</td>
</tr>
<tr>
<td>Ariane B. Anderson</td>
<td>Sofia Hatziminadakis</td>
</tr>
<tr>
<td>Alexis Arnold</td>
<td>Michelle Henderson</td>
</tr>
<tr>
<td>Alexia Athienitis</td>
<td>René Herrera</td>
</tr>
<tr>
<td>Massiel Avila</td>
<td>Marquis Holley</td>
</tr>
<tr>
<td>Michael Ayres</td>
<td>Owen Hooper</td>
</tr>
<tr>
<td>Chighaf Bakour</td>
<td>Amanda Huensch</td>
</tr>
<tr>
<td>Krysta Banke</td>
<td>Ufuoma Ikoba</td>
</tr>
<tr>
<td>Kyna Betancourt</td>
<td>Stephanie Jacobs</td>
</tr>
<tr>
<td>Michelle Bomaugh</td>
<td>Katie Jansen</td>
</tr>
<tr>
<td>Christina Brown-Wujick</td>
<td>Victoria Johnson</td>
</tr>
<tr>
<td>Vanessa Burshnic</td>
<td>Beth Jones-Mason</td>
</tr>
<tr>
<td>Brittany Cagle</td>
<td>Doug Jordan</td>
</tr>
<tr>
<td>Angela Candela</td>
<td>Ehsan Kashfi</td>
</tr>
<tr>
<td>Betty Carlin</td>
<td>Sandra Kauffman</td>
</tr>
<tr>
<td>Megan Cross</td>
<td>Shannon Kelly</td>
</tr>
<tr>
<td>Kristine Del Vecchio</td>
<td>Meredith Kernbach</td>
</tr>
<tr>
<td>Darlene DeMarie</td>
<td>Sarah Kiefer</td>
</tr>
<tr>
<td>Alex DeMolina</td>
<td>Elicia Kimble</td>
</tr>
<tr>
<td>Claudia Dold</td>
<td>Kaitlyn Kroner</td>
</tr>
<tr>
<td>Mary Domanski</td>
<td>John Kuhn</td>
</tr>
<tr>
<td>Sasha dos Santos</td>
<td>Monica Landers</td>
</tr>
<tr>
<td>Wendy Duncan</td>
<td>Mark Laplante</td>
</tr>
<tr>
<td>Marcella M. Falquez</td>
<td>Andrea Lemus</td>
</tr>
<tr>
<td>Glen Freeman</td>
<td>Khamchand L. Ramkissoo</td>
</tr>
<tr>
<td>Jennifer Friedman</td>
<td>Ivanna Leon</td>
</tr>
<tr>
<td>Aimee Frier</td>
<td>Jacob Levine</td>
</tr>
<tr>
<td>Whitney Fung</td>
<td>Teleshia Lewinson</td>
</tr>
<tr>
<td>James A. Gibson</td>
<td>Barbara Lewis</td>
</tr>
<tr>
<td>Ray Grace</td>
<td>Andrea Lowe</td>
</tr>
<tr>
<td>Nicole Guerrero</td>
<td>Andrea Lypka</td>
</tr>
<tr>
<td>Renee Hangartner</td>
<td>Victor Mancini</td>
</tr>
<tr>
<td>Haley Hanson</td>
<td>Harri Miller</td>
</tr>
<tr>
<td></td>
<td>Christina Moss</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OUR Student Employees and Colloquium Media Interns**

Neto Coulibaly  
Taylor Emmons  
Angela Ferguson  
Joel James  
Emilia Kalogiannis  
DeMarra Lee  
Natasha Ram

Vanessa Dreher  
Elizabeth Jourdan  
Cassandra Rankin

**Colloquium Student Volunteers**

<p>| Abby Afsahi | Ashley De Kort | Kayla Li | Daniela Pena Castro |
| Nafia Ali | Mojdeh Eftekhari | Sara Logan | Melissa Pennell |
| Bethany Austin | Taylor Emmons | Brittany Long | Ashley Phillipson |
| Kashif Basaria | Megan Frederick | Eth Louissaint | Amber Pirson |</p>
<table>
<thead>
<tr>
<th>Nicolas Benedetti</th>
<th>Emily Furar</th>
<th>Katherine Martin</th>
<th>Natasha Ram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachel Bimonte</td>
<td>Walter Hernandez</td>
<td>Angel Martin</td>
<td>Hannah Purvis</td>
</tr>
<tr>
<td>Deanna Chan</td>
<td>Chloe Jackson</td>
<td>Rebecca Mason</td>
<td>Karina Podymova</td>
</tr>
<tr>
<td>Brittney Clarke</td>
<td>James Joel</td>
<td>Tammy Ngo</td>
<td>Sama Nidhi Sama</td>
</tr>
<tr>
<td>Patrick Collard</td>
<td>Medjine Jeanty</td>
<td>Van Nguyen</td>
<td>Reeya Shah</td>
</tr>
<tr>
<td>Neto Coulibaly</td>
<td>Jeremy Kirey</td>
<td>Aleksandra Olearska</td>
<td>Bryanna Tanase</td>
</tr>
<tr>
<td>Delanie Dantuma</td>
<td>Urszula Komenda</td>
<td>Misha Patel</td>
<td>Alyssa Wheeler</td>
</tr>
<tr>
<td></td>
<td>Kierra Lentsch</td>
<td>Nikita Patel</td>
<td></td>
</tr>
</tbody>
</table>
To learn more about the Office for Undergraduate Research

Location – LIB 210 • (813) 974–6824
Connect with the OUR
facebook.com/urusf
instagram.com/usfour1
twitter.com/ourusf1

lib.usf.edu/undergraduate-research/