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### *Acknowledgements*

We would like to extend our heartfelt thanks to the faculty-mentors who have so generously given of their time to develop undergraduate student scholars.

We would also like to extend our gratitude to the faculty, graduate students, and alumni from Florida's universities and colleges who provided the colloquium presentations and panel discussions.

We would like to recognize the following University of North Florida departments and organizations for their support of undergraduate research and their support of this conference.

Academic Affairs  
Office of Undergraduate Research  
Person by Situation Interaction Research Team  
Student Union  
Honors & Scholars Program

We would also like to thank the following individuals for their support and assistance in coordinating this event.

Jessica Brown, Office Manager Honors & Scholars Program  
Anne Hoover, Budget Director Academic Affairs  
Heather Johnston, Undergraduate Research Fellow  
Katie Chenard, Events and Registration Coordinator

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## Schedule

<b>Time</b>	<b>Event</b>	<b>Location</b>
8:00am – 9:00am	Registration	Main Hallway
9:00am – 9:50am	Poster Session A	Ballrooms C & D
10:00am – 10:50am	Colloquium A	Room 3605 Room 3606 Room 3804 Room 3805 Room 3806
11:00am – 11:50am	Poster Session B	Ballroom C & D
12:00noon – 12:50pm	Luncheon	Ballroom A & B
1:00pm – 1:50pm	Keynote Address: Nicolas Michaud	Ballroom A & B
2:00pm – 2:50pm	Colloquium B	Room 3605 Room 3606 Room 3804 Room 3805 Room 3806
3:00pm – 3:50pm	Poster Session C	Ballroom C & D

On the following pages \* denotes authors who served as the faculty mentor.



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## **Poster Session A**

**9:00 a.m. to 9:50 a.m.**

**Ballrooms C & D**

### **1. Characterization of the ATP-site Mutation T157A in *E. Coli* Gamma Complex Clamp Loader**

P. Nguyen, C. O. Paschall, & \*L. B. Bloom

University of Florida

In *E. Coli*, the gamma complex clamp loader loads the beta sliding clamp onto DNA. The beta clamp tethers the DNA polymerase to DNA and increases the processivity of DNA synthesis. In the presence of ATP, the gamma complex binds to the beta clamp and DNA to form a ternary complex. ATP hydrolysis allows the gamma complex to dissociate from the beta clamp and DNA complex, loading the beta clamp onto DNA. In my project, I work with the gamma complex clamp loader with mutation T157A in the gamma subunit. This mutation inhibits ATP hydrolysis. The data from the kinetic studies, and binding and opening assays may provide further insight into the mechanism of clamp loading and how the mutation T157A affects binding and opening of the gamma complex.

### **2. Self-generated attitude change: Some effects of mere thought and individual differences on attitude polarization**

J. Shah, R. Mottola, & \*C. Leone

University of North Florida

Mere thought - in the absence of any external influence - is often sufficient to produce attitude polarization. That is, initially favorable attitude become more favorable and initially unfavorable attitude become more unfavorable with increasing amounts of thought about attitude objects. In our study, we explored the role of two processes that might mediate the connection between mere thought and attitude polarization: (a) selective generation of attitude consistent beliefs and (b) thought-induced increases in belief confidence. We also explored the role of individual differences in the need for consistency as a variable that might moderate the connection between mere thought and attitude polarization. Initial data collection has been completed and data analyses are in progress.

### **3. Impacting Deaf Struggling Readers: The Outcomes of Phonological Instruction**

A. E. Joyner, H. L. Nicols, \*S. M. Syverud, & \*C. A. Guardino

University of North Florida

The researchers analyzed the effectiveness of teaching phonological skills to deaf struggling readers in two different settings—oral and total communication. The results from the two research projects involving multiple case studies will be shared. Tests of nonsense words were administered to measure student improvement. All eighteen participants from both projects made gains in reading. Results from the first investigation is currently in press in the American Annals of the Deaf.

### **4. Effects of thermal and oxidative stress on coral larvae health and post-settlement survivorship**

K. C. Olsen & \*C. Ross

University of North Florida

*Porites astreoides* exhibits a larval life history stage that is common to many other scleractinian (hard) corals, and thus makes a great model system for studying the impacts of environmental stressors on coral larvae. It has been proposed that elevated temperatures cause sublethal stress in the coral's algal symbionts. Unchecked, this can lead to the accumulation of reactive oxygen species (ROS) in the host's tissue, which in turn can cause cellular death and ultimately the expulsion of the symbionts (bleaching). In order to determine how thermal and oxidative stressors affect the larval stage of corals, *Porites astreoides* larvae were either incubated under elevated temperatures (+ 3.5°C) or in the presence of selected concentrations of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), in order to simulate oxidative stress. Post treatment the larvae were evaluated for mortality, settlement, bleaching, and biochemical signs of oxidative damage. There was no significant difference between treatments in initial survival, settlement, and bleaching of the

coral larvae. Final survivorship following a 3 week period indicated that the larvae in the heat treatments had significantly higher mortality. These results suggest that thermal and oxidative stressors have long term effects on coral recruits.

## **5. Spin-glass peak characterization in the diluted magnetic semiconductor GaMnS**

J. H. Blackburn & \*T. M. Pekarek

University of North Florida

We have examined the III-VI diluted magnetic semiconductor (DMS) GaMnS (concentration  $x = 0.09$ ). Previous studies have confirmed this system to be the only known III-VI DMS to exhibit a spin-glass transition. New analysis of the previously reported non-linear susceptibility  $\chi_{nl}$  (where  $\chi_{nl} = M_{nl} / H$ ) has led to the extraction of an additional scaling parameter  $\delta$ . We find our susceptibility data to be consistent with the expected behavior in the zero-field limit ( $H = 100$  G to  $H = 1000$  G). We report a value of  $\delta = 5.5 \pm 0.5$ . This is consistent with previous scaling analysis where related critical exponents were found to be  $\gamma = 4.0 \pm 1.0$  and  $\beta = 0.8 \pm 0.2$ . Moreover, the II-VI system ZnMnTe ( $x = 0.51$ ) has been examined as well and has been found to produce the correct qualitative non-linear susceptibility behavior. The extracted critical exponent for the Zn-blend has been found to be  $\delta = 5.5 \pm 0.5$  as well.

## **6. Secure Programming by Using Flawfinder**

A. Mack

Florida A&M University

Faculty Mentor: H. Chi

C, C++, and Java source codes are submitted to the Software Assurance Metrics and Tool Evaluation (SAMATE) website on the SAMATE Reference Dataset (SRD) as test cases. Each source code is given a test case id number and is marked as good or bad. The compile errors and a few of the weaknesses are mentioned in the descriptions of the source codes. [2] The first time the source codes are uploaded to the site, they are assigned a status of "candidate". While the source codes are being evaluated, they are assigned the status of "deprecated". Once the source codes meet the evaluation requirements of the SRD, they are assigned the status "accepted". After the source codes are assigned the status "accepted", users may use security tools to test the codes for flaws. David A. Wheeler developed a tool that would help with secure programming known as Flawfinder. Flawfinder examines source-codes and reports their security weaknesses. It can be installed on UNIX and Linux based systems. Flawfinder uses a built-in database of C and C++ functions that can cause security flaws such as buffer overflow risks, format sting problems, race conditions, potential shell meta-character dangers, and poor random number acquisitions. A few of the functions used by Flawfinder are strcpy(), strcat(), gets(), sprintf(), scanf(), [v][f]printf(), [v]snprintf(), syslog(), access(), and random(). Flawfinder matches source code text against its functions and produce a list of potential security flaws known as "hits" which are sorted by risk levels. The highest risk levels are shown first. Flawfinder reports hit density which is hits per thousand lines of code. Small programs may have large hit densities due to the fact that the small numbers of lines in the source code increase the size of the denominator in the hit density ratio. In this presentation, we will present a few case studies to show how we use this tool and develop hands-on labs. Those labs will be incorporated into various programming classes

## **7. Face Recognition Using Compressive Sensing Ideas**

J. Liang & \*Xin Li

University of Central Florida

In this research project, we apply face recognition to different well-known datasets. We take an approach based on sparse signal representation (SRC) and suggest replacing the state-of-art L1-minimization in SRC with iterative reweighted least squares (IRWLS). This approach again yields sparse solutions, but does so more efficiently than standard L1 solvers. The IRWLS approach is also much simpler to implement than L1-minimization since it does not involve convex programming. We perform experiments with the proposed approach on laboratory images as well as real-world images.

## **8. Religiosity, politics, and attitude toward capital punishment**

H. Johnston, A. Wood, \*C. Leone, & B. Cyrus

University of North Florida

Although most Americans are religious, there are considerable differences in the attitudes held by religious people – even among members of the same faith – about religion-related issues such as capital punishment. Given that most religions view capital punishment as an immoral act, we hypothesized that individuals with an intrinsic orientation to their religion will adopt unfavorable attitudes about capital punishment (consistent with the position of their religion), whereas individuals with an extrinsic orientation to their religion will adopt favorable attitudes about capital punishment (consistent with secular views). Our results were consistent with these predictions. Moreover, when controlling for differences in political ideology, the effects of religious orientation on attitudes about capital punishment were again reliable and unchanged. In sum, differences in religious orientation can explain differences among religious individuals in their attitudes about life-and-death issues such as capital punishment, and these differences are not the result of confounds with political ideology.

## **9. Treating diabetes in mice with an implantable bioartificial pancreas**

B. M. Sorensen, \*N. Simpson, M. Beveridge, S. Neelan, & M. Corrado

University of Florida

Type 1 diabetes results from the immune system attacking endogenous pancreatic  $\beta$ -cells, taking away the body's ability to regulate blood glucose levels properly. An insulin-secreting bioartificial pancreatic construct is a novel approach to treat type 1 diabetes. Our lab is developing a bioartificial pancreatic construct containing insulin-secreting cells and demonstrating its potential to maintain normoglycemia and prolong life in a diabetic mouse. Our results from these experiments were varied but promising. Some diabetic mice achieved normoglycemia for a period of time. However, blood glucose levels tended to rise back to diabetic levels eventually. The bioartificial pancreatic construct extended the life span of diabetic mice considerably. This study has shown the feasibility of the bioartificial pancreas to one day provide a therapy for type 1 diabetes. This construct may allow people afflicted with diabetes to lead a normal lifestyle without the long-term adverse affects of the disease.

## **10. Quilting our Community: Girls' Thoughts on Identity, Privilege, and Leadership**

C. R. McFadden

University of Central Florida

Faculty Mentor: M. Tweed

This research project studies the ways that education and consciousness-raising about identity, diversity, and privilege shape how adolescent girls (specifically, mentees enrolled in the Young Women Leaders Program) think about race/ethnicity, community, and leadership. Through the analysis of journal entries and quilt patches produced by a group of 7th grade girls, we examine how group exploration of these topics influences conceptions of racial privilege and the leadership development of young women.

## **11. Remote Sensing: A Comparative Study of Tropical Cyclones and Phytoplankton Blooms**

A. M. Merritt & \*S. Chiao

Florida Institute of Technology

This research is to investigate phytoplankton blooms following the passage of Tropical cyclones in the Florida Coast. Wind shear from a tropical cyclone creates internal friction which causes deep nutrient enriched water to be displaced from the bottom of the ocean floor up towards the surface. In return, the abundance of upwelled nutrients near the surface provides an ideal environment for the growth of biological substances such as chlorophyll and phytoplankton. Through the usage of remote sensing datasets, sea surface temperature (SST), and chlorophyll (Chl-a) were monitored for a case study of Hurricane Jeanne (2004) for the purpose of examining these variables. The overall goal of this research is

to prove that changing sea surface temperature and chlorophyll concentrations can be correlated to various characteristics of tropical cyclones which in combination results in an increase of phytoplankton.

## **12. Visualization of Meta-Data Models in Computer-Assisted Collaborative Environments to Solve Instances of Just-In-Time Data Interoperability Problems**

M. Sherwood & \*A. Sanchez-Ruiz

University of North Florida

Sanchez-Ruiz, Umapathy, and Hayes have proposed a general software architecture, which characterizes collaborative environments that assist stakeholders in solving instances of “just-in-time” data interoperability problems. We postulate that these environments will help bridge the gap that exists between the implementation of meta-data models and their intended semantics. In this presentation we explore the possibility of creating a visualization model for bridging that gap. A clear goal for these visualizations is to enable individuals, who are not familiar with implementation details of meta-data models, to understand and explain their intended semantics to other stakeholders so they can collaboratively specify data transformations—through a visual/gestural language—needed to solve instances of the data interoperability problem. Some of the challenges associated with effectively creating these visualizations include poorly documented semantics and the need to preserve the security—i.e., confidentiality, integrity, and availability—of the actual data.

## **13. Stable Isotope Analysis of Large Predatory Sharks in Southwest Florida Coastal Waters**

M. D. Nicholson & \*D. G. Rumbold

Florida Gulf Coast University

Stable Isotope Analysis (SIA) has been around for over thirty years. It is extremely useful in showing elemental movement cycles in ecosystems. It was not until recently that SIA was used as a tool to study carbon and nitrogen in marine environments. Although SIA has been used successfully to validate dietary results and trophic position in invertebrates and bony fish (for example, see Fry 1988), its application to sharks is relatively recent (Fisk et al. 2002 were among some of the first). We sampled six different species of sharks including: hammerhead sharks (*Sphyrna mokarran*), tiger sharks (*Galeocerdo cuvier*), bull sharks (*Carcharhinus leucas*), blacktip sharks (*Carcharhinus limbatus*), blacknose sharks (*Carcharhinus acronotus*), and nurse sharks (*Ginglymostoma cirratum*). The data on  $\delta^{15}\text{N}$  from samples analyzed suggested that most of the tigers and bulls fed higher than hammers, blacknose, blacktips and nurse sharks. Data from  $\delta^{13}\text{C}$  showed no significant difference among species. Relationships between carbon and nitrogen isotopes were strongest for hammers and nurse sharks.

## **14. A Memetic Algorithm for Automated Music Composition**

D. Wells & \*H. ElAarag

Stetson University

Music has been an integral part of society for hundreds of years. Since the advent and rise of computers and computer technologies, musicians have utilized these advances in their craft, whether it is in creating electronic music or the notation of musical scores. The field of memetic computing is a new and developing one. A few researchers are using memetic algorithms to solve real world problems. The research in this paper offers an attempt at combining the two areas in a novel approach to produce quality musical compositions using a memetic algorithm. Unlike other computer music composition proposals in the literature, our proposal does not need any intervention from the user. Our preliminary results are very promising and conform to MIDI protocol standards; the industry standard for electronic musical instruments.

### **15. On the Income Inequality in the United States**

E. Aroutiounian

University of North Florida

Faculty Mentor: A. Gallo

Recent research in public economics points out the growing income and wage inequality within the United States since the 1970s. Noted economists such as Emmanuel Saez and Thomas Piketty believe that this is a cause for concern and that public policy ought to better reflect this growing inequality through greater income redistribution. However, this is not the current view of many economists with many having voiced opposition to the increased implementation of income redistribution policies. This paper surveys the income inequality literature from economics and provides a philosophical opposition to increased income redistribution. In addition, the paper will also provide potential explanations as to the causes of the current income inequality

### **16. Corpus-Based Concatenative Synthesis**

J. Van Hoff & \*N. Wolek

Stetson University

Corpus-based concatenative synthesis is a process wherein sounds are analyzed, described, quantized and fed into a database. The sounds, once in this state, can be compared to sounds from other databases. Complex correlations and relationships can be derived from the comparison of measured descriptors within the database. A sound, based on its descriptors, can be used to output a related sound. These 30+ sound descriptors are numerical values that describe each sound based on psycho-acoustically relevant standards of measure. This database will contain samples of the real world equivalent of what the user utters or imitates, such as a cow or a bass drum, and output the most closely related sounds. Using this process and utilizing the real-time capacity of ZSA.Descriptors, vocal utterances and imitations of percussion will be used to drive the output of the ZSA database. Using the aforementioned techniques and processes this project hopes to create a unique musical instrument wherein the worlds of concrete poetry/vocal performance combine with the technology of corpus-based concatenative synthesis, specifically ZSA.Descriptor (Emmanuel Jordan, 2010).

### **17. A seasonal growth rate study of juvenile *Gopherus polyphemus* on the University of North Florida campus.**

W. Z. Rushing & \*J. A. Butler

University of North Florida

A vital period in a gopher tortoise's life is the juvenile years, which span from age 1 to approximately 5. During the juvenile years the tortoise is vulnerable to mammalian, reptilian, and avian predation, due to its size and softness of shell. This study examines the growth rate of juvenile tortoises within a population on the University of North Florida campus. Beginning in May 2010 juvenile tortoises were captured, measured and marked, if they were not previously marked. Towards the end of the foraging season, in August, September, and October, as many of the same tortoises as possible were recaptured and re-measured. An appraisal of the data does suggest that the most amount of growth is occurring between the 3rd and 5th year of life. By increasing the sample size the regression equations of age vs. amount of growth, can be used to predict growth rates, and can be compared to the growth rates of other studied populations.

### **18. Evaluation of microwave irradiation assisted filtration for the capture and inactivation of viral aerosols for collective protection**

A. J. Grippin, M. H. Woo, & \*C. Y. Wu

University of Florida

HVAC (heating, ventilation and air conditioning) filters capture most viruses, but do not actually inactivate the viruses that pass through them. The objective of this study was to evaluate microwave irradiation assisted filtration through an HVAC filter for the deactivation of viral aerosols. For in-flight

microwave decontamination, microwave irradiation was applied in different periods of applications under discrete microwave powers from 125W to 375 W. The survival fraction on the filter and the inactivation efficiency of the entire system were investigated to find the integrated effect of filtration coupled with microwave irradiation. The effects of different environmental conditions, specifically relative humidity and application media, on inactivation efficiency were also investigated. Experimental results show that increased microwave power level and irradiation time resulted in a decrease in survival fraction and an increase in inactivation efficiency. Ongoing experiments with different relative humidities will be reported in the conference.

### **19. Personality and Team Functioning: A Look at Team Traits and Team Member Similarity**

T. Borawski, D. Martinez, & K. Dalrymple

University of South Florida

Faculty Mentor: L. DeChurch

Focusing on two popular theories, the five factor model and the similarity attribution theory; team performance was assessed by personality traits evaluated with team motivation, conflict, and cooperation, while team members with similar personality traits are evaluated via team conflict, creativity, strain, and likeability.

### **20. Selection of Internalized Aptamers**

Y. M. Chang, M. O'Donoghue, T. Bayraç, & \*W. Tan

University of Florida

Aptamers, in addition to having selectivity and affinities similar to antibodies, have a number of other advantages including no immunogenicity, low molecular weight allowing for increased tissue penetration, ease of functionalization, and reproducible chemical synthesis. Once optimized, our aptamers will also be investigated for improved drug delivery applications. Research has shown that using cell-penetrating peptides (CPP), it is possible to deliver polar, biologically active compounds both in vitro and in vivo. While these proteins are useful in delivering cargo rapidly, they suffer from many problems including toxicity and conjugation issues. We hope to make small nucleic acid probes that can serve a similar function without the drawbacks. Once complete we can use this aptamer for drug delivery or to target intracellular proteins. Many drugs suffer from low membrane permeability, but we can use these aptamers to help improve the permeability of these drugs, increasing their value and effectiveness.

### **21. Liberal Democracy and the Middle East**

B. M. Roach

University of North Florida

Faculty Mentor: M. Corrigan

Western liberal democracy is unlike any other system of government created. Since 9/11 American foreign policies have centered on the spread of democracy to Islamic nations. Democratic development may occur through the failed accountability of current governments and the religious leaders coming to power and failing the people. The failure of accountability within oil-rich nations, in which the government and elites gain in wealth and the people suffer poverty. In the Middle East, oil revenues allow citizens to not pay taxes; therefore, there is no accountability within the government. Clerics encourage the overthrow of the government for not being "true to Islam" and come to power. Eventually, the people of these nations will understand that the clerics influence people religiously, but they cannot govern nor manage the economy. Religious leaders cannot rule effectively and are rebelled against by the people. A theocratic democracy is not sustainable and liberal democracy flourishes.

## **22. China's Growing Influence in Africa and the United States Response**

X. Monroe

University of Florida

Faculty Mentor: S. O'Brien

The unique political and economic relationship between China and Africa has recently caught the attention of the U.S. Congress and State Department. Their concerns primarily deal with the increasing influence and popularity of the Chinese contrasted with a diminished and strained view Africans have toward the United States and the west. Although some argue that both sides show a lack of altruism, many argue that China's intentions go far beyond economically benefiting itself. Therefore the purpose of this research proposal is to search for answers in a new and developing field of international diplomacy. By interviewing as many figures from the Foreign Relations committee in Congress, Non-governmental organizations (NGO), and the U.S. State Department, this investigator plans to unravel what some see as the emergence of a "New Cold War".

## **23. Quantifying Protein Expression Associated with Drug Resistance in Single Myeloma Cells**

<sup>1</sup>S. Mirza, <sup>\*2</sup>Y. Chen, & <sup>\*2</sup>J. Koomen,

<sup>1</sup>University of South Florida & <sup>2</sup>Moffitt Cancer Center

In regards to multiple myeloma cell lines, the identification and quantification of certain proteins is crucial to understanding cancer biology. Moreover, single cell analysis would effectively quantify protein expression in single cells and therefore could be used to assess variability between individual cells in both naïve and drug-resistant cell lines.

## **24. The Effect of Stimulation of the Central Amygdala on Taste Reactivity in Rats**

C. A. Riley, T. W. Tobin, & \*M. S. King

Stetson University

Several regions of the brainstem, with interconnections to the forebrain, form the gustatory neural circuit. This circuit is responsible for processing taste input and eliciting motor output. It is known that the amygdala, a forebrain region, is connected to this circuit, but its modulatory effects are unknown. The purpose of this study was to understand how electrical stimulation of the amygdala affects taste reactivity (TR) behaviors and the number of active neurons in the brainstem regions of the gustatory neural circuit. The hypothesis was that stimulation of the amygdala while taste solutions are infused into the mouth would alter the number of TR behaviors and active neurons. Electrodes and cannulas were surgically implanted into the amygdala and oral cavity, respectively. Behaviors were observed by reviewing videotapes and active neurons mapped using histological techniques. The results show that the stimulation did alter TR behaviors and activate neuron in the gustatory circuit.

## **25. Observability and Controllability of Autonomous Skid**

G. G. Loures & J. A. Alvarado Valverde

Embry-Riddle Aeronautical University

Faculty Mentor: S. Drakunov

This research is focused on improving the capabilities of an existing autonomous vehicle system by adding the possibility of observing and controlling lateral skid motion. With safety and efficiency in mind, a novel theoretical model of the nonlinear dynamics of skid was developed, and subsequent observer and closed-loop control algorithms are under construction which utilize the robust properties of the nonlinear control technique of sliding modes. In addition, efforts to interact with an existing network in the vehicle are being made in order to provide feedback to the controller and send commands to the vehicle from an outside computer.

## **26. Targeting Bcl-2 for Enhanced Anticancer Efficacy of Ionizing Radiation and Chemotherapy**

<sup>1</sup>T. Wang, <sup>2</sup>X. Deng, & <sup>\*</sup><sup>1</sup>C. Liu

<sup>1</sup>University of Florida & <sup>2</sup>Emory University

Accumulating evidence suggests that the relative ratios of pro- and anti-apoptotic Bcl-2 family proteins determine the sensitivity or resistance of cells to apoptotic signals. Many of the current methods of cancer treatment such as ionizing radiation (IR) and available chemotherapy drugs often lead to resistance after a prolonged period of use through yet to be defined molecular mechanisms. Preliminary data by Western blotting in lung cancer cells suggest that a combinational therapy with agents that suppress the pro-survival side effects of these treatments may be more effective in lung cancer cells. To this end, lung cancer cells were pre-treated with increasing doses of an experimental drug, BI 366, which acts primarily as a Bcl-2 inhibitor, and then exposed to IR. Immunoblot analysis shows that the proteins levels of Bcl-2 and Mcl-1 decreased noticeably in a dose-dependent manner. Taken together, these observations suggest that sequential treatment with Bcl-2 inhibitors has the potential to increase the effectiveness of radiation therapy by reducing the anti-apoptotic behavior of cancer cells. Thus, a better understanding of the regulation of drug resistance could lead to better strategies for more effective cancer treatment.

## **27. Characterization of Basigin and MCT1 expression in mouse testes**

P. J. Moran & <sup>\*</sup>J. D. Ochriotor

University of North Florida

Basigin is a cell adhesion molecule that interacts with MCT1. It has been proposed that Basigin and MCT1 form a complex within the neural retina to shuttle lactate from Müller cells to photoreceptor cells. Basigin null mice exhibit blindness, which may be attributed the lack of metabolic substrate transported to photoreceptors. Because Basigin is also expressed in testes, and Basigin null male mice do not produce viable sperm, we hypothesize that a similar shuttle exists to fuel spermatogenesis. The purpose of this study was to determine whether the expression of Basigin and MCT1 overlaps in mouse testes. Immunoblotting and immunohistochemistry analyses were performed with antibodies specific for Basigin and MCT1. While immunoblotting analyses proved the presence of Basigin and MCT1, immunohistochemical analyses indicate that the two proteins are not expressed in the same locations. Therefore, it is unlikely that a lactate shuttle exists within the testes to support sperm development.

## **28. Material Heterogeneity within the Cercopithecoid Mandible**

<sup>1</sup>M. C. Granatosky, <sup>\*</sup><sup>1</sup>D. Daegling, <sup>2</sup>S. McGraw, & <sup>3</sup>A. Rapoff

<sup>1</sup>University of Florida, <sup>2</sup>Ohio State University, <sup>3</sup>Union College

Advances in the field of skeletal biomechanics lend support to the idea that material heterogeneity throughout the primate mandible is an adaptive feature that may mitigate stress concentrations. The mandibular symphysis experiences different loading regimes than other parts of the mandible, but few studies have addressed the idea of whether material inhomogeneities exist among different regions of the jaw. This study seeks to answer if 1) the material composition of symphyseal bone is unique in the mandible, and 2) structural geometry influences material variation observed within the mandible. We investigated bone stiffness in coronal sections taken distal to M1 and at the mandibular symphysis from a sample of *Macaca fascicularis* (N=12), and colobine monkeys (N=8). Microindentation data reveals that material composition at the symphysis is significantly different than bone more distal in the mandible, but the patterning of this difference is distinct between taxa. Material heterogeneity thus may increase or decrease relative stress at the symphysis depending on the taxon under study.

## **29. Estimation of Methane Generation Potential from Construction and Demolition Landfills**

G. Maul, <sup>\*</sup>H. Kim, & T. Townsend

University of Florida

In this research, methane generation potential (L<sub>0</sub>) of construction and demolition landfills in the U.S. was estimated. Six different types of biodegradable waste components prevalent in the C&D waste stream were tested using biochemical methane potential (BMP) assay. The waste components yielded methane

potentials in the range of 24mL CH<sub>4</sub>/g VS (lumber) to 289mL CH<sub>4</sub>/g VS (corrugated cardboard). Gypsum in drywall was determined to reduce methane potential of drywall paper by 48%. An estimation model created to approximate a site-specific L<sub>0</sub> for any C&D waste stream. Four waste composition studies were applied to the model, and the average L<sub>0</sub> was estimated as the U.S. national average L<sub>0</sub> for C&D waste – 12.8 m<sup>3</sup>/Mg C&D waste. Accounting for methane reduction by flaring in MSW landfills, annually disposed methane potential from C&D landfills in the U.S. were approximately 16% compared to MSW landfills in 2003.

### **30. Perceptions of child abuse: When context makes a difference**

I. Javed, S. Keane, \*L. B. Hawkins, \*C. Leone, & C. Trevina

University of North Florida

Although physical features of behaviors impact the way behaviors are perceived, perceptions of behavior are often altered by the context in which behaviors occur. These ideas were tested in the context of potentially physically abusive encounters between parents and children. Participants read scenarios in which a hostile parent-child exchange occurred that culminated in a parent paddling a child on his/her buttocks, slapping a child across the face, hitting a child with a fist, slapping a child other than on his/her face, using a belt on a child's buttocks, or choking a child. Results indicate that although the nature of parental behavior is a factor in people's perceptions of certain behaviors as abusive, the context (i.e., instigating events) also alters those perceptions. These results have potentially important implications for whether or not abusive behavior is reported to authorities and for appropriate medical and psychological interventions with childhood victims of abuse.

### **31. The role of L1.1 in axonal growth from adult zebrafish primary brainstem neurons over growth-inhibitory chondroitin sulfates**

<sup>1</sup>M. M'boge, <sup>1</sup>E. Bajuelos, <sup>1</sup>F. Shabazz, <sup>1</sup>A. Tapanes-Castillo, <sup>2</sup>M. Oudega, & \*<sup>1</sup>J. Plunkett

<sup>1</sup>St. Thomas University, <sup>2</sup>University of Pittsburgh School of Medicine

Axon regeneration depends on the balance of growth-inhibiting and growth-promoting influences. Chondroitin sulfate proteoglycans (CSPGs) inhibit axonal regeneration in the injured mammalian spinal cord. However, zebrafish regenerate their axons beyond the injury site despite the presence of CSPGs. It has been shown that axon growth from zebrafish neurons depends on the presence of the growth-promoting L1cam homolog, neuronal adhesion molecule L1.1 (nagl1.1). Our goal is to understand how L1.1 affects the response of zebrafish neurons to CSPGs in vitro. We hypothesize that L1.1 over-expression will result in more neurons crossing into and growing in CSPG areas, while reduced L1.1 expression is expected to reduce axon outgrowth and decrease the number of neurons crossing into and growing in CSPG areas. We have successfully delivered morpholino and GFP expression constructs into brainstem neurons. We are determining how alteration of L1.1 levels within cultured adult brainstem neurons affects axon growth over CSPGs.

### **32. Characterization of Sonic Hedgehog (SHH) Signaling in the Vertebrate Limb**

B. S. Vangara, C. M. Bouldin, & \*B. D. Harfe

University of Florida

This study seeks to uncover the role the Sonic Hedgehog (SHH) signaling pathway plays in patterning the vertebrate mouse limb. Using tissue-specific conditional knockout mice, the gene coding for the protein responsible for SHH hedgehog signaling, the Smoothened (Smo) gene, was removed from two regions in the vertebrate limb: the zone of polarizing activity (ZPA) and the apical ectodermal ridge (AER). Preliminary results from the Harfe lab indicated that removal of Smo in the posterior ZPA resulted in the reduction in the number of digits formed while removal of Smo in the AER lead to the formation of an extra cartilaginous condensation. Current experiments are underway to test the phenotypic effect of simultaneously removing Smo signaling in both the ZPA and AER of the developing vertebrate limb.

### **33. Clarifying the Association Between Obsessive-Compulsive Disorder and Suicidal Behavior**

A. M. Moskowitz, \*T. E. Joiner, J. D. Ribeiro, & J. Hames

Florida State University

Approximately 2.2 million Americans suffer from Obsessive Compulsive Disorder (OCD; Kessler, 2005). Ten to twenty-seven percent of these individuals attempt suicide at least once (Kamath et al., 2007). Despite this, the relationship between OCD and suicidal behavior has been understudied and research has yielded contradictory results. This relationship will be examined through the lens of the Interpersonal Theory of Suicide (Joiner, 2005). The acquired capability to engage in suicidal behavior develops through repeated exposure and habituation to painful events (Joiner, 2005). As such, we would predict that compulsive behaviors that elicit physical pain will increase one's capability to commit suicide. Thus, the aims of the project are to clarify the association between OCD and suicidal behavior and to determine whether compulsivity is a predictor of suicidal behavior. Clarifying the relationship between OCD and suicide will give insight into which OCD symptoms put individuals at risk to engage in suicidal behavior.

### **34. Optimizing Protein Production on Miniaturized Continuous Exchange Cell Free Bioreactors**

Benjamin D. Chapman, Ruba Khnouf, & \*Z. H. Fan

University of Florida

This study seeks to understand the flow characteristics of micro-devices used for in vitro biological reactions. Through the study of fluid flow and membrane properties a novel micro-plate reader compatible bioreactor can be developed. The device under study is a CECF (continuous exchange cell free) bioreactor. CECF uses diffusion to exchange crucial components and remove waste. The goal of the device is maximum protein synthesis for high signaling capabilities through either luminescence or fluorescence measured by a micro-plate analysis device. The sensor array to be studied consists of an arrangement of micro-fluidic wells. Each well is designed to produce a preselected protein through a cell-free synthesis process while using a minimal amount of reagents. To optimize the useful protein production we must analyze the geometry and mechanisms of synthesis.

### **35. Literature Review and Development of a Wiki Resource on the Use of Natural Products in Epilepsy Treatment**

<sup>1</sup>R. W. P. Orynich, <sup>2</sup>S. C. Schachter, & <sup>3</sup>N. J. Sucher

<sup>1</sup>University of Florida, <sup>2</sup>Harvard Medical School, <sup>3</sup>University of Western Sydney

Faculty Mentor: B. A. Hauser

Largely unstudied natural-product-derived therapies are used globally to help control seizures and/or ameliorate adverse effects of antiepileptic drugs. No comprehensive, credible, and centralized database for collating and sharing information pertaining to the use of natural products in treating epilepsy exists. We aim to develop the infrastructure for the global scientific community to collaborate and identify natural products for further investigation for epilepsy treatment. The Wiki website, "Epilepsy Naturapedia", was built and designed to organize the knowledge base relating to the investigation of natural products in epilepsy treatment, encourage contribution from the scientific community, and facilitate dissemination of new findings. A literature review provided data for the website's launch. The website was first demonstrated at the American Epilepsy Society Annual Meeting in December 2010 receiving positive audience feedback. The literature review identified hundreds of quotes from 40 authors, describing the historical antiepileptic use of natural products.

### **36. Medication Score: An Approach to Assessing Medication Load**

K Keith, MS Keyes, K Relihan, T Zanganeh, LL Jones, & \*PR Borum

University of Florida

Pediatric dosing of antiretroviral medication is often prescribed according to patient specific parameters including age, weight, and/or body surface area. However, current pediatric studies involving antiretroviral medication loads fail to account for these patient specific parameters. The Med Score is a ratio of prescribed dosage to minimum recommended dosage that can be used to standardize medication

load in a heterogeneous population, thus allowing cross-patient comparison. The objective of this study was to determine the validity of the Med Score as a clinical tool in assessing medication load. Patients grouped together as having the same medication load using the number of antiretroviral medications or individual antiretroviral medication dosages were found to have different medication loads when using the Med Score. The Med Score is a more sensitive indicator of medication load than current standards as it identifies variations in medication load within populations considered to be homogenous by current standards.

### **37. Increasing Genetic Prediction of Warfarin Dose: APOE and CALU**

B.E. Gawronski, N. Carris, Y. Gong, T. Langaee, \*J. A. Johnson

University of Florida

The anticoagulant warfarin exhibits great dose variability between patients leading to the risk of bleeding and clotting events. We hypothesized that the additional genetic information from two genes, apolipoprotein e (APOE) and calumenin (CALU) could better predict variance in warfarin dosing. A cohort of 350 warfarin-treated patients was genotyped for two SNPs in APOE (rs429358 and rs7412), which were combined to make a haplotype, and one SNP in CALU (rs339097). A stepwise linear regression model was used to assess the mean weekly warfarin dose in relation to genetic and non genetic factors. The haplotype  $\epsilon 4$  showed a significant effect on dose requirement (parameter estimate -0.0441 mg/week  $p=0.0241$ , partial  $r^2=0.0086$ ). The addition of APOE  $\epsilon 4$  information to the algorithm increased the variance explained by 1.55% from 47.37% to 48.92%. The association makes the case for further study of APOE and CALU in future pharmacogenomic warfarin studies.

### **38. Analysis of Basigin gene expression in mouse sperm samples**

J. D. Read & \*J. D. Ochriotor

University of North Florida

Basigin is an integral membrane protein belonging to the immunoglobulin gene superfamily and is found in nearly every tissue in the body. One of the many processes in which Basigin participates is spermatogenesis, the production of sperm cells in the seminiferous tubules. Animals in which the Basigin gene is deleted (Basigin null mice) are infertile, as viable sperm do not develop. The purpose of this experiment was to determine whether sperm samples are a way to test for Basigin mutation and polymorphisms in the human population that may contribute to infertility. The goal is to create a protocol using mice which can also be used in human applications in the future. In this experiment Tri-Reagent® was used to isolate RNA from mature spermatozoa from mouse epididymis. The isolated RNA was reverse transcribed into cDNA and then amplified via PCR using primers specific for Basigin. Sperm proteins were also probed for the presence of Basigin via immunoblotting analyses. No Basigin mRNA was detected; however, Basigin protein is present. Sperm samples are therefore not an effective method to test and diagnose Basigin mutations in the human population.

### **39. Inhibition of Yeast Alcohol Dehydrogenase by Bisphenol A**

J. Wang, R. Indralingam, & \*H. Price

Stetson University

Bisphenol A (BPA) is an important feedstock in the chemical industry, finding use as a component of a plastics and resins. The toxicology of BPA has been the focus of investigation for nearly eighty years. Correlation of BPA exposure to altered cellular function and gene expression has resulted in a push to ban BPA from food-grade plastics. Given the significance of BPA toxicology, we set out to determine whether or not BPA could alter the function of a metabolic enzyme. The target in this model study was yeast alcohol dehydrogenase (YADH). Computer modeling revealed multiple potential binding sites within the NAD<sup>+</sup> and ethanol binding domain. Results of kinetic assays performed in the presence of BPA at fixed [NAD<sup>+</sup>] and variable [ethanol], as well as those performed using fixed [ethanol] and variable [NAD<sup>+</sup>], indicate that BPA decreases V<sub>max</sub> and increases K<sub>m</sub>. Based on these results, a model of mixed inhibition is proposed.

#### **40. Building Secure Programming Modules for STEM students**

X. Simms

Florida A&M University

Faculty Mentor: H. Chi

With the Corporate world moving towards more secure forms of programming we should see a ripple effect in our University, however that is not the case. We would like to outline benefits of insert secure programming modular at all levels of STEM courses. This will provide our future scientists and engineers in their better positions for secure approach toward coding in the business and government worlds. In this poster, we will discuss our approach for building hands-on labs/projects for STEM students by using various open resources, such as FxCop and SAFECODE.

#### **41. The Role of the Sympathetic Nervous System in Toad Venom Toxicity**

<sup>1</sup>A. J. Iselborn & <sup>2</sup>C. S. Paterson

<sup>1</sup>University of North Florida, <sup>2</sup>Florida State College at Jacksonville

Common toads (*Bufo* sp.) produce toxic skin secretions that result in tachyarrhythmias in most animals. Toad secretions contain bufodienolides, a digoxin-like compound; epinephrine, a chronotropic agent; and bufalin, a substance that increases adrenal gland release of epinephrine. We tested the role of epinephrine and digoxin in producing tachyarrhythmias associated with toad venom toxicity. Heart rate responses to epinephrine, toad toxin, and digoxin were compared in Eastern garter snakes (*Thamnophis sirtalis*), a toad-eating snake, and yellow rat snakes (*Elaphe guttata quadrivittata*), a non-toad-eating snake. Heart rate responses to epinephrine did not differ between the two species and both were blocked by the beta-1 antagonist propranolol. Toad toxin produced an increased heart rate in *Elaphe*, but not *Thamnophis*, that was not blocked by propranolol. Digoxin also produced an increased heart rate in *Elaphe* that was not blocked by propranolol. We conclude that toad venom toxicity is independent of the sympathetic nervous system.

#### **42. Mere thought and attitude polarization: Another look**

M. Valente, S. Lewis, O. Aleman, & \*C. Leone

University of North Florida

Recent research shows there are numerous but unrelated indicators of attitude strength. Our goal was to examine this claim in the context of understanding the effects of mere thought effect on attitude extremity. To do this, we explored three indicators of attitude strength: elaboration, evaluative-cognitive consistency, and thought confidence. Our results also showed that the various indicators of attitude strength are not isomorphic (i.e., cognitive processes that produce attitude polarization as assessed one index may not produce attitude polarization as assessed using other indices). Researchers would be well advised to select indices on well-articulated theoretical grounds and/or use multimodal assessments of attitude extremity. Additionally, our results extend previous theory and research by showing that there may be multiple mediators of the effects of mere thought on attitude polarization. Researchers might develop models in which different mediators are mapped onto different individual differences which may moderate thought-induced attitude polarization.

#### **43. Red mangrove response to sea level rise and changes in salinity**

J. B. Conrad, V. J. Gibbs, M. Donnelly, & \*L. J. Walters

University of Central Florida

Conservation organizations predict mangrove ecosystems will be severely impacted by sea level rise and extremes in salinity associated with climate change. Our study tested interactive effects of salinity (0, 15, 30 ppt) and water depth (covering all but top leaves, covering up to level of sediment, and below sediment level) on the red mangrove *Rhizophora mangle*. Trials with seedlings (< 1 yr old) began in February (winter) and June (summer) 2010. A third trial began in September (fall) 2010 with mangrove seeds. Each trial ran for 2 months and leaf number, plant height, and biomass were recorded at start and finish of

each trial. There was 100% survival in all three treatments. Our results suggest red mangroves can tolerate near complete inundation at a range of salinities.

#### **44. Chemically-mediated rheotaxis in the marine hermit crab *Pagurus maclaughlinae***

B. R. Tate & \*J. H. Cohen

Eckerd College

Crustacean ecological interactions often rely on both chemical and hydromechanical cues which are used synergistically in chemically-mediated rheotaxis, whereby individuals detect odor molecules in their fluid environment and move upstream or downstream in response. Orientation of shelled and shell-less macrobenthic hermit crabs (*Pagurus maclaughlinae*) were tested in apparent darkness using a unidirectional flow tube under a series of water flow rates to explore their reactions to chemical cues: odor-free control, a subtidal predator (*Callinectes sapidus*) and seagrass refuge (*Syringodium filiforme*). Shelled hermit crabs in *C. sapidus* odor showed the greatest proportion of movement at higher flow rates while shell-less crabs responded at control levels. Shelled and shell-less crab responses did not differ across flow rates in *S. filiforme* odor. The data suggest shelled *P. maclaughlinae* employ chemically-mediated rheotaxis to avoid predators while shell-less crabs minimize movement.

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Saturday, January 29, 2011, 9:30am

Thursday, March 10, 2011, 6:00pm

Saturday, March 12, 2011, 9:30am

Tuesday, May 17, 2011, 6:00pm

Saturday, May 21, 2011, 9:30am

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## ***Colloquia Session A***

**10:00 a.m. to 10:50 a.m.**

### **Working Smarter - Not Harder: Benefits of reciprocal peer mentoring**

**Room 3804**

D. Beane & R. L. Gainey

University of North Florida

In this discussion we seek to highlight the benefits of reciprocal peer mentoring and explore how this peer relationship can greatly enhance the faculty mentor-student protégé dyad. We will discuss how the reciprocal peer relationship can enhance writing, research, conference presentations, and more while lightening the load of the faculty mentor and student protégés. The mentor-protégé relationship has been likened to a surrogate parent-child relationship. Just as children benefit from parents' guidance, experience, and wisdom, in a different domain student protégés benefit from faculty mentors' guidance, experience, and wisdom. Likewise, the peer relationship can be equated to a relationship between siblings. Just as siblings enhance one another's lives through assistance, support, and reassurance, peer student scholars can enhance one another's learning experiences. The benefits of reciprocal peer mentoring have been demonstrated in many spheres of academia from elementary school to graduate programs (e.g., Brewster, 2005; Fantuzzo, 1992, 2006; Hudson, 2008; Miller, 2005; Murray, 2008; Saville & Zinn, 2006; Zwart, 2008). When coupled with the faculty mentor-student protégé relationship, reciprocal peer mentoring can increase learning and productivity for students at an exponential rate while lessening the workload for the mentor. Additionally student peers gain valuable experience in mentoring one another, which helps them develop skills needed for collaborations in future scholarly endeavors and enhances their credentials. Increased productivity, greater learning, leadership training, enhanced credentials, and lighter workloads make reciprocal peer mentoring a relationship that can benefit scholars at all levels.

### **Telling the Story: Communicating your research**

**Room 3805**

T. Brown

University of Central Florida

You've collected your data and run your tests, and you're ready to share your results. But what's the best way to make sure your audience understands how important your findings are? Learn how to tell the story of your research, both in conference style and in poster presentations. Key topics include effective use of PowerPoint, putting technical terms in plain language and how to keep your audience engaged.

### **Strategies for successfully navigating the higher education pipeline**

**Room 3806**

M. Barreto, S. Bingham, J. Colon, T. Petrino, F. Redway, and S. St Clair

Barry University

Barry University's College of Arts and Sciences offers biomedical science research for undergraduates as a part of the curriculum. Successful navigation of this pipeline is reflected in students' outcomes in which 81.9% are retained to graduation and 79% are enrolled in or have completed graduate and/or professional schools. The strategies to achieve this success include: enrollment in enrichment courses - Introduction to Research, Bioinformatics and Three Pillars; engagement in on- and off-campus research; presentations at scientific meetings; participation in biomedical and biomedical-related workshops. A new phase to this pipeline - the Research

Opportunities And Directions in Science (ROADS) Research Club, serves as a gateway exposing freshmen and sophomores to research career opportunities.

Supported by NIH NIGMS MARC U\*STAR, T34 GM 008021-27, and MBRS RISE R25 GM059244-10 Grants, Barry University.

### **Undergraduate Research: Challenges and Strategies**

**Room 3605**

H. Price

Stetson University

Supervising undergraduate research is a complex undertaking. While often rewarding, it is often fraught with challenges. Minimizing the potential negative impact of some of these challenges requires a strategy that leads to greater student involvement, while at the same time provides the student with a beneficial learning experience. An experience that can translate into a student gaining important skills not only related to practical laboratory experience, but also to enhanced critical thinking, and communicative skills. Another important aspect of undergraduate research that is often lost in the perceived importance of publication deals with the problem of publication. What work is publishable, and where should it be published? Furthermore, how does a faculty member convince his or her colleagues that the quality of undergraduate research should not necessarily be judged by the number of publications or presentations? These are some of the many challenges confronting faculty engaged in undergraduate research. From the student perspective undergraduate research is frequently seen as a necessary evil, but for others it is an experience they can't wait to have. Undergraduate research can be absolutely overwhelming, but it does not need to be overwhelming. What can the student do to make their research experience most worthwhile? What steps can the student take to establish a good rapport with their research mentor? What can a student do to learn the most about undergraduate research opportunities? What decisions should the student make prior to committing to a research project to allow the student the best chance of having a positive and fun learning experience? These and other issues of undergraduate research will be the focus of my discussion.

## ***Poster Session B***

**11:00 a.m. to 11:50 a.m.**

**Ballrooms C & D**

### **1. iBully: The Impact of Gender of Bully and Victim on Perception of Cyberbullying and its Consequences**

C. D. Sharpe, \*K. E. Mottarella, & S. N. Whitten

University of Central Florida

This study explores the impact of victim and bully gender in relation to perception of bully likability, punishment, impact on victim, and victim responses. Participants will be asked to review a Cyberbullying scenario in which the gender of the victim and perpetrator are manipulated. All scenarios are identical except for the gender pairs of the victim and perpetrator: Male (bully)-Male (victim), Male (bully)-Female (victim), Female (bully)-Female (victim), and Female (bully)-Male (victim). Participants will then complete the Likability of Bully, Punishment for Bully, Impact on Victim, and Victim Response scales. Exploring the influence of bully and victim gender on perception of cyberbullying will help to illuminate situations in which cyberbullying, may not be as readily recognized or its potential destructive impact understood.

### **2. “Treat me like an officer—don’t treat me like a female”: An Analysis of Workplace Assignment**

K. F. Warren

Stetson University

Faculty Mentor: D Everett

Historically, the prison has been considered a “man’s world” (Britton 2003:1). However, over the past thirty years, female correctional officers increasingly have entered the field, but not without resistance from their male counterparts (Britton 2003:1–2). Guided by Joan Acker’s (1992) theory of the gendered organization, this qualitative study used semi-structured interviews (N = 27) to examine how correctional officers’ gender and the prison’s custody grade affect officers’ perceptions of their inclusion and exclusion in the workplace. Specifically, this investigation of correctional officers from two men’s state prisons in the Southeast found that, with regard to their work assignments, various gendered processes serve to exclude all but a few select females from a vital “proving” ground, namely, using force against inmates. The fact that women are seldom considered an asset is exemplified in the female officer’s plea, “Treat me like an officer—don’t treat me like a female.”

### **3. Differential Learning Styles and Achievement Scores in Home-schooled Children**

A.M Santos & \*R. Medlin

Stetson University

In the small city of DeLand, Florida a scholastic study with a goal of comparing achievement scores and satisfaction in home schooled children was done. The purpose of this research was to determine if home-schooled students, whose parents were previously made aware of their children’s ideal learning styles, would have higher achievement scores and an overall satisfaction in learning. Home-schooled students from grades 5 through 8 were tested with the Learning Style: The Clue to You (LSCY) and Wide Range Achievement Test 3 (WRAT3 ). Thirty families were split into 2 groups, half in experimental and in control. Parents in the treatment group were first made aware of their child’s best learning style, then instructed to implement it in their daily curriculum. After a two month test period all students were tested on achievement and satisfaction. Once all data had been collected, no significant results were found.

#### **4. Invasive Cuban Treefrogs on a North Florida Urban Campus: Preliminary Results on Population Fluctuations and Effects on Native Hylids**

C. E. Oehmig, E. Suarez, J. M. Mitchell, & \*G. R. Johnston

University of Florida

In October 2008, a discovery of the predatory Cuban treefrog (*Osteopilus septentrionalis*) was made on an urban campus in Gainesville, FL. We installed pairs of PVC pipes around the 10 isolated natural ponds on campus to test two null hypotheses: (1) that the Cuban treefrog does not occur throughout campus and (2) that native treefrogs are not affected by the presence of *O. septentrionalis*. Our first hypothesis was rejected after the first sampling period in November 2008 when this invasive species was captured on all 10 wetlands on campus. Our second hypothesis was tested preliminarily in an unplanned experiment in Jan 2009. Conclusions: *O. septentrionalis* occurs on the entire Santa Fe College campus and populations in northern FL may fluctuate cyclically; cold winter temperatures will influence the northern limit of this treefrog; and reduction in *O. septentrionalis* numbers appears to cause a positive numerical response in native treefrogs.

#### **5. Perception of the Human Body During the Renaissance**

K. N. Vedhanayagam

University of South Florida

Faculty Mentor: N. Yavneh

Doctors are exposed daily to the defects and abnormalities presented of their patient's bodies while the general population is bombarded with sensual images of the human body through media. Although the human body has become a commonplace thing most of us are unaware that for centuries it lay shrouded in mystery because science was not purely based on observable fact but on misguided ideals of classical writers. This paper will examine the evolution of medical pedagogy and the pioneer of integrating human dissection into modern medical curriculum, Andreas Vesalius. Although human dissection was performed prior to Vesalius' work, he revolutionized ideas about the human body and introduced a new practical method of dissection, soon incorporated into medical curriculums around Europe. What ideas did Vesalius introduce that were unique to this period of medical history. How exactly did this revolution of scientific thought and medical education affect the perception of doctors and laymen? This paper will address these issues as they relate to the evolving world of medicine in Renaissance Italy.

#### **6. Determining the role of Pif1p in meiosis**

C. A. Bureu, E. A. Leblanc, & \*L. R. Vega

Barry University

Every diploid human cell contains 23 pairs of chromosomes. Every time one of these cells divides, the chromosomes of that cell shorten. To prevent loss of genetic information from shortened chromosomes, non-coding telomeres are located at the chromosome ends. Once telomeres reach a critical length, a cell will cease to divide. The telomerase enzyme adds telomeres to the ends of chromosomes, but is only active in early development in most human diploid cells. Other organisms, such as *Saccharomyces cerevisiae*, brewer's yeast, maintain telomere length through the use of telomerase. Pif1p is a helicase that acts as a negative regulator of telomerase in yeast. Pif1p prevents telomerase from inserting telomeres into double strand breaks. During meiosis, double strand breaks occur as part of homologous recombination, where Pif1p may serve an important role. My research focuses on determining the role of Pif1p during meiosis. (NIH-NIGMS MARC Grant 5T34 GM008021-27, Barry University)

#### **7. Detection of Eastern Equine Encephalitis Using Real-time PCR on Formalin-Fixed Paraffin Embedded Horse Tissues**

N. C. Aytes, C. Glotfelty, J. Liu, D. Prakoso, \*M. T. Long, S. Beachboard

University of Florida

Eastern Equine Encephalitis (EEE), a mosquito-borne RNA-virus, causes brain inflammation with 95-100% fatality in humans and horses. The number of EEE cases in horses has risen over the last decade

and this year there were 4 human deaths in Florida. We have developed a tissue archive from the UF College of Veterinary Medicine's equine cases since 1995 and standardized detection in formalin fixed paraffin embedded tissues (FFPE). This is a large resource for safe handling of EEE tissues. Tissues were deparaffinized, extracted and cDNA was synthesized using random hexamers and oligo primers. Real-time PCR protocols developed by the Centers for Disease Control were used. Twenty-eight EEE positive horses were used to confirm PCR specificity and sensitivity. Currently, additional horses and their tissues are being analyzed to determine the appropriate fixed tissues for sequencing of virus in these horses.

#### **8. Evaluating a nonlethal assay for detecting effects of oil spills on marine fish:**

##### **Immunocytochemistry for cytochromeP451A1 in fish blood cells**

F. A. Barnouti, & \*J. Gelsleichter

University of North Florida

Poly Aromatic Hydrocarbons which is the toxic portion of the oil harms many aquatic animals and other species. Species are prone to develop diseases due to the exposure of such toxins such as, live tumor. Data was obtained from the lethal method used to detect the toxins using protein CYP 1A1 showed high presence of it in exposed fish. Previous research showed that presence of high levels of liver enzyme contains cytochrome P450 1A1 (CYP 1A1) in intoxicated animals. It is hypothesized that a non-lethal method will be determined to detect toxins in fish using the protein CYP 1A1 as a marker. A non-lethal method using peripheral blood cells to detect high levels of protein CYP 1A1 by utilizing blood smears in fish. Data is ongoing and the results are non-determined. The importance of this study is to use a non-lethal method to help the environment and reduce diseases.

#### **9. Preventing introduction: Outlining safe methods for killing aquarium *Chaetomorpha* prior to disposal**

J. A. Solomon, J. P. Steed, S. Carhuff, R. Odom, \*L. Walters

University of Central Florida

Invasive species pose a serious threat to our natural ecosystems; aquarium dumping is an important vector for introducing invaders. With over 50% of aquarists we surveyed currently using green macroalga *Chaetomorpha* in their aquariums, potential releases pose a real invasion threat. We tested five techniques for killing aquarium plants on both small clumps and fragments of *Chaetomorpha*. Techniques included: microwaving, freshwater, boiling, freezing, and desiccation. Four methods were effective at tested exposure times, while desiccation requires longer durations than tested to be effective. Microwaving and boiling were 100% effective at 15 and 60 seconds, respectively. Freezing and freshwater were effective at exposure periods of 2 and 6 days, respectively. Desiccation is an effective method at exposure periods longer than 4 hours. These results will be utilized in outreach materials to aquarium hobbyists and professionals in our efforts to prevent future detrimental invasions associated with aquarium release.

#### **10. Functional properties of GW182 translational silencing domain $\Delta 12$**

L. La, B. Yao, M. R. Bubbs, & \*E. K. L. Chan

University of Florida

MicroRNAs (miRNAs) are incorporated into the RNA-induced silencing complex (RISC) to affect translational silencing. GW182, an 182-kDa protein, binds to Argonaute proteins and both are critical for RISC function. The goal of this study is to further identify the functional properties of GW182  $\Delta 12$  domain. Immunofluorescence was used to examine the ability of GW182  $\Delta 12b$  peptide to penetrate HeLa cells. The functional significance of  $\Delta 12b$  within  $\Delta 12$  in silencing tethered reporter or interfering endogenous miRNA function was analyzed in luciferase reporter tethering assay for the effect on repression activity and "20 bulge" reporter miRNA interfering assay, respectively. Immunoprecipitation and Western blot were performed to analyze the function of  $\Delta 12b$  on the secretion of expressed proteins into extracellular media. GW182  $\Delta 12b$  peptide was shown to penetrate HeLa cells but shows no

functional significance in translational silencing.  $\Delta 12b$  is necessary for transient expressed  $\Delta 12$  to be secreted into extracellular media.

### **11. Epigenetic Regulation in Endophytic Fungi Acquired from Mangrove Trees**

N. Mahid, J. Beau, & \*B. J. Baker

University of South Florida

Gene regulation gives the cell control over structure and function. Epigenetics is an upcoming concept which studies chemical changes DNA without actually changing the genotype. Direct DNA cytosine methylation is associated with strong silencing of gene clusters in fungi. Studies show that a variety of new compounds can be acquired from fungi once those silent bio-synthetic pathways are active. To study the effects of Azacitidine, fungal samples were isolated and cultured from Floridian mangroves collected in Everglades City, Florida. We hypothesized that if we expose our three samples to Azacitidine, it would activate previously silent bio-synthetic pathways thus producing diverse array of secondary metabolites when compared to the unmodified controls. LCMS data confirmed our hypothesis. Results of the modified samples had different peaks when compared to the unmodified controls.

### **12. Pregnant in Ghana: HIV and Obstetric Fistula**

A. O. Saner, A. H. Williams, & \*Ann H. Williams

University of Tampa

Ghana has a population of 24 million with a 2% adult HIV prevalence and more than 150,000 women living with HIV, many of them in rural villages. Mother-to-Child Transmission (MTCT) of HIV has become a growing issue for developing countries like Ghana. Obstetric fistula (OF), which is a physical impairment that occurs during labor, has become common in areas with low hospital resources and poorly trained surgeons. I studied obstetric services that were available in Bolgatanga of the Upper East Region in Ghana. Results showed extensive HIV testing, treatment, and OF repair were only found at the town hospital in Bolgatanga. Prevention of Mother-to-Child Transmission (PMTCT) of HIV has not been implemented in village clinics. Reconstructive surgery for obstetric fistula is conducted by only one OBGYN at the town hospital. Therefore, attempts will be made to introduce PMTCT and OF education and outreach to village clinics.

### **13. Determining Gopher Tortoise Burrow Occupancy Using a Robotic Camera**

K. D. Nguyen, A. A. Legeza, \*A. Harris, & \*J. A. Butler

University of North Florida

Tortoise researchers and land managers typically estimate tortoise population numbers using a count of the burrows rather than counting every tortoise present. Sometimes tortoises utilize more than one burrow at a time or share burrows with others, in which case the number of burrows would either overestimate or underestimate the population. To account for this, earlier researchers devised a method by which the burrow number is multiplied by a correction factor of 0.614 in order to provide a more accurate population estimate, however, others have argued that this correction factor should be site-specific. The goal of this interdisciplinary project is to build a subterranean robot to navigate burrows located on the University of North Florida campus. The subterranean robot will provide a real-time live high-definition video feed in order to establish the occupancy of tortoise burrows, thus determining the appropriate correction factor for the University of North Florida tortoise population.

### **14. A Model for Infrastructure of Green Computing**

E. Tshabe

Florida A&M University

Faculty Mentor: H. Chi

A growing number of IT producers and users are aggressively moving toward green IT, helping in the process of building a green society and economy by tackling environmental issues and by adopting environmentally sound practices. In this research paper, our objective is the construction of a strategy for

implementing green computing technology to make the Florida A&M University Computer Science Department more environmentally friendly and cost effective. Using the Kepler Scientific Workflow simulation model, statistical data on the population distribution of students, faculty and guests using computational resources will be modeled from designated areas. The data that will be used in the model will also include the number of computer's currently in use and those that are not, projected increase or decrease in number of user's, budget allocations which includes a cost/benefit analysis of hardware replacements, cloud computing options and disposal of defunct equipment. The idea of this model is aimed toward a 5-10yr plan since the turn around for most computer parts is around this time frame.

### **15. Our Campus, Our Health: A Campus Health Assessment**

A. N. Williams, S. L. Chadwick, & \*J. W. Merten

University of North Florida

College students are often perceived to be healthy; lives filled with friends, activity and optimism for a promising future. That is not always the case; students may be developing damaging lifestyle behaviors and suffering from emotional and interpersonal problems. As with individuals, college campuses are very diverse and health education programs should not be designed without understanding the unique needs of the student body. A thorough health assessment should be administered annually to track trends in risk behaviors. Borrowing from the community-based participatory research paradigm, a voluntary and anonymous health assessment was designed, implemented and analyzed by a student research team in partnership with the experienced researcher. After data analysis, the study culminates with a "State of the Student Health" address to share the results with the campus and community to shape future campus health initiatives.

### **16. Structural and Kinetic Characterization of HIV-1 Subtype C N88D/L90M Protease**

D. Chen, N. Goldfarb, A. Robbins, & \*B. Dunn

University of Florida

Approximately 33.4 million people are infected with human immunodeficiency virus (HIV) worldwide. 50% of these infections are due to HIV-1 subtype C. Study of HIV-1 subtype C protease and its mutants are relatively limited. Two nonactive site mutations—N88D and L90M—were engineered into the wild type HIV-1 subtype C protease. Both the wild type and mutant protease were overexpressed in *E. coli* and purified. Our data has determined there is a 168 fold difference in  $K_i$  between the wild type and N88D/L90M mutant when bound to saquinavir, showing that the N88D/L90M mutations provides the protease with a significant level of resistance to saquinavir. The mutant protease was crystallized in complex with saquinavir and X-ray diffraction data was collected on the crystals to a resolution of 2.4 Å.

### **17. Botswana's Escape from the "Resource Curse"**

M. L. Wrael, & \*W. Nylen

Stetson University

This paper explored Botswana's escape from the "resource curse," in which countries with vast amounts of exported natural resources tend to have corrupt, authoritarian governments, economic growth (increase in GDP) but not economic development (diversification and increased productivity), and little progress in human development (better education, increased life expectancy, etc.). Botswana has avoided the resource curse for several reasons, including a colonial history that did not result in the formation of extractive infrastructure detrimental to economic development and intranational trade and communication. It has also maintained a strong democratic government after independence that is dedicated to transparency, citizens' welfare, and economic diversification, as well as a vibrant civil society that holds the government accountable for its actions and the distribution of export revenues. For these reasons, Botswana is often cited as one of Africa's success stories in maintaining democracy, experiencing economic development, and improving the lives of its citizens.

### **18. Effects of RNAi supression of vitellogenin on reproduction in the lubber grasshopper**

K. A. Veleta, D. R. Tokar, & \*J.D. Hatle

University of North Florida

Reproduction shortens life span in many model animals. To understand the role of investment of protein in this trade-off, we are investigating the effect of knocking down the reproductive protein vitellogenin (Vg) in lubber grasshopper using RNA interference (RNAi). Vitellogenin is the egg yolk-precursor protein in this organism and constitutes 90% of the total protein in the eggs, thus illustrating its reproductive importance. Double-stranded RNA sequences of 515 and 661 base pairs were injected to knock down the expression of the Vg gene and its respective protein. Within the Vg-515 group, both the hemolymph levels of Vg and the number of egg clutches laid post injection suggests that the RNAi treatment was effective in blocking the expression of the vitellogenin protein. Subsequent experiments will measure the effect of the Vg-515 RNAi on messenger RNA levels and ultimately on life span.

### **19. Prevalence of Blood Parasite Infection and its Effect on the Packed Cell Volume of Florida**

#### **Raptors**

N. Giordano

Stetson University

Faculty Mentor: P. May

I investigated the effect of Plasmodium or Haemoproteus infection on the packed cell volume of raptors of central Florida. Blood samples were taken from 182 raptors of central Florida in the orders Falconiformes and Strigiformes. The raptors used in this study were brought into Florida Wild Veterinary Hospital and The Audubon Center for Birds of Prey for medical treatment. I calculated the packed cell volume by placing the blood drawn from each raptor in centrifuge. I used the remaining blood to create slides and scan the slides for the presence of the parasites microscope. The packed cell volume of infected raptors showed no statistically significant difference from the packed cell volume of uninfected raptors. The prevalence of infection was significantly higher in Strigiformes than in Falconiformes. This indicates that raptors in the order Strigiformes are more susceptible to infection by the blood parasites Plasmodium and Haemoproteus.

### **20. Effects of Imatinib Mesylate, a c-abl tyrosine kinase inhibitor, on regulation of insulin gene expression in mouse beta cell line NIT-1 cells**

P. Zhang, & \*C.Q. Xia

University of Florida

Imatinib Mesylate, known commercially as Gleevec, is a tyrosine kinase inhibitor renowned for its therapeutic effects on chronic myelogenous leukemia. However, Imatinib also demonstrated effects of hypoglycemia in a number of patients and alleviated symptoms of type 2 diabetes. Several targeting pathways have been proposed, including the protection of beta cells, reduction of insulin resistance, and increase in insulin secretion. Imatinib was investigated for its effect to target and inhibit proto-oncogene abl and to lower blood glucose levels. An increase of insulin secretion was observed in NIT-1 cells. Using insulin ELISA and qPCR, results showed that NIT-1 cells showed increased insulin secretion and insulin gene expression when stimulated with Imatinib. Further research is considered to confirm this increase of insulin secretion under Imatinib treatment, using C-peptide ELISA and western blot. In addition, the potential for insulin resistance reduction has not been investigated and would also be considered for additional research.

### **21. Determining the Coefficient of Drag on Various 8 Man Rowing Shells**

J. Bryan, C. -P. G. Blondeau, J. Manzo, & \*J. Mosca

Embry-Riddle Aeronautical University

In the sport of rowing the drag of the racing shell is of great importance. A change in drag over the race will significantly impact the performance of the crew. This has been studied in the 1960's, but has yet to be researched by means of computerized computational fluid dynamics (CFD). Since the size and shape

of a rowing shell is constrained by functionality and racing regulations, the general contour of all shells is similar. The following analyzes ERAU racing shells with the CFD program STAR CD, to obtain accurate coefficients of drag. By looking at the results, along with the subtle differences in shell design, recommendations were formed to minimize drag while preserving constraints. A brief look into using riblets to further reduce drag is considered. To demonstrate the results, a model incorporating the design recommendations as well as the riblets is prepared and analyzed using the same program.

## **22. Distinguishing species ranges of *Fundulus heteroclitus* and *Fundulus grandis* using genetic marker cytochrome-b**

A.Toledo, & \*M. G. Gilg

University of North Florida

*Fundulus heteroclitus* and *Fundulus grandis* are tested to determine the population ranges of both species. These species express similar morphologies and ecological niches. This type of study requires precise genetic markers that allow the two species to be distinguishable. Analysis of cytochrome-b and Ldh-B is done to distinguish between samples collected in areas of overlap between populations of both fish species and infer patterns in the distribution of the two populations. This data will be used to determine if there is a correlation between environmental factors and the frequency of a population of each species in a given area. *F. heteroclitus* and *F. grandis* populations that are found in Spartina and Mangrove vegetation are now being sampled during their spawning seasons. Preliminary data has been collected for a fine scale assessment of the distribution of the two species in the areas of overlap in this ongoing study.

## **23. P15, P16 and P21 are not required for TGF- $\beta$ induced inhibition of human myeloid leukemia cells**

S. St. Clair, G. Shaw, & \*X. Hu

Barry University

In mammalian cells, the cell cycle progression is counterbalanced by cdk inhibitors (ckis), Transforming growth factor beta (TGF- $\beta$ ) is one of important growth inhibitors, which has been reported to be a result of up-regulation of several cdk inhibitors. In this study, we investigated whether several cdk inhibitors play any role in TGF- $\beta$ -mediated cell cycle control in human myeloid leukemia cells. We found that TGF-  $\beta$  significantly inhibited proliferation of MV4-11 and TF-1 cells but had no effect on the expression of p16 and p15. In addition, we were not able to detect significant expression of p21 in these cells. Our data suggest that p15, p16 and p21 are not required for TGF-b induced inhibition of human myeloid leukemia cells in culture. (NIH MBRS RISE R25 GM059244-10, Barry University)

## **24. A Comparison of Educational and Occupational Aspirations among Poor Urban and Rural Colombian Students**

L. Amaya

Stetson University

Faculty Mentor: D. Everett

In South America, Colombia's poverty rate is three times higher in rural areas than in urban areas (UNICEF Humanitarian Action Update 2007:2). Moreover, 75.6 % of children in urban areas attend secondary school, compared to only 48% of rural children (UNICEF Colombia Education Statistics 2007:4). Hence, this study analyzes the educational and occupational aspirations among poor urban and rural secondary school students in Colombia by examining their perceptions of educational encouragement by significant others and of the obstacles they may face in reaching their educational and occupational goals. This study concludes that, although rural students showed greater interest in pursuing a college education, urban students aspired to higher levels of education and stated that they were more likely to pursue their educational goals immediately after high school. However, rural and urban students aspired to similar occupations and reported facing similar obstacles when attempting to reach their educational and occupational goals.

## **25. Health Before Wealth**

J. I. Whitman

University of North Florida

Faculty Mentor: A. Gallo

The convergence hypothesis posits that developing nations will have higher growth rates of per capita income than developed nations. The result should be a so-called “catch-up effect”, in which developing nations eventually catch up to developed nations in terms of per capita income. In practice, this hypothesis does not hold; however, the convergence hypothesis does hold when the analysis is restricted to certain nations or groups of nations. Economic research suggests that some countries do not converge because of key barriers to growth and convergence. This paper proposes that one such barrier is a lack of infrastructure. The author also proposes that life expectancy can be used as a proxy for infrastructure growth. This suggests that developing nations who should be converging may instead be building infrastructure. To verify this hypothesis, the author examines life expectancy and income in a diverse group of countries.

## **26. Rebirth in the Caribbean: The Sublime and the Abject in Paule Marshall's Praisesong for the Widow**

P. M. Perez

University of North Florida

Faculty Mentor: K. Cartwright

My project seeks to research the nature of Caribbean, African, and feminine discourse in literature. The language of the feminine varies cross-culturally, and yet there is an underlying gender relation of the "abject" or a shame that is projected onto women that is not spoken of. Praisesong for the Widow by Paule Marshall seeks to explain the complexity and depth of an individual's encounter with a side of themselves that has been socially rejected due to male hierarchy and an innate human fear of the sublime, an overawing force connected with the abject and feared parts of nature within human beings. In researching this topic, I hope to expand the knowledge of what it means to encounter the sublime and experience the abject as a black woman, both classifications having been constantly undermined and ignored in literature. Understanding this process, helps one to understand the feminine relationship to a land, a culture, and customs that have been lost or are not practiced in an individual's current environment.

## **27. Reduction of HIV-1 Associated Macrophage Activation by Nelfinavir**

<sup>1</sup>C. M. Reist, <sup>1</sup>M. A. Wallet, <sup>1</sup>S. Appelberg, <sup>1</sup>G. Guiulfo, <sup>2</sup>J. W. Sleasman, & \*<sup>1</sup>M. M. Goodenow

<sup>1</sup>University of Florida, <sup>2</sup>University of South Florida

HIV-1 infection causes innate immune activation, resulting in severe inflammatory complications aside from immune deficiency. The current treatment for HIV-1 infection is combination antiretroviral therapy [cART], which suppresses viral replication and restores CD4 T cells. However, crucial aspects of immune activation persist, most notably activation of innate immune cells such as monocytes and macrophages. Protease inhibitors [PI] are a key component of cART designed to target HIV-1 protease function. The results of this study show that a specific PI, nelfinavir [NFV], has anti-inflammatory effects independent of its antiviral effects. NFV was shown to inhibit lipopolysaccharide [LPS]-induced macrophage activation both in vivo and ex vivo, as measured by inflammatory biomarkers of pathogenic immune activation in HIV-1 infection. Inclusion of NFV as a novel anti-inflammatory agent may augment the overall efficacy of therapy by targeting HIV-1-associated inflammation and diminish the occurrence of HIV-1 complications.

## **28. Resistance Training Repetition Variability at Specified Intensities**

C. Williams, & \*P. Magyari

University of North Florida

Introduction: Published resistance training (RT) tables state that approximately eight repetitions (reps) can be achieved at 80% of one repetition maximal (1RM). Purpose: To determine if published guidelines are appropriate when exercising on Cam Mediated Variable Resistance Exercise Equipment (CMVREE) generally utilized by fitness facilities. Methods: Nineteen college aged males with a minimum of two months RT experience performed 1RM testing on eight pieces of CMVREE. After a minimum of 48 hours rest, subjects returned to perform as many reps as possible with 80% of their 1RM on each piece of equipment. Rest between exercises was standardized at two minutes. Results: Mean reps and SD achieved on each piece of CMVREE ranged from  $7.1 \pm 2.5$  reps on the shoulder press to  $18.7 \pm 8.7$  reps on the leg curl. Conclusion: Exercise professionals must recognize that variability exists between the number of reps achieved on various pieces of CMVREE.

## **29. Ovariectomy Increases Lifespan, Vitellogenin Levels, and Anti-oxidant Activity in *Romalea microptera***

J. M. Williams, M. D. Drewry, & \*J. D. Hatle

University of North Florida

Lifespan extension can result from Diet Restriction (DR) and reduced reproduction via ovariectomy (OVX). DR can be defined as consuming 70% of Ad Libitum feeding; to feed ad libitum is to eat as much as an organism can consume. OVX is the surgical removal of an animal's ovaries. The egg precursor protein Vitellogenin (Vg) is expressed in all egg producing animals. Vg is sequestered by the ovaries, converted to Vitellin and incorporated into the yolk of developing eggs. Oxidative damage can be described as an imbalance between the production of reactive oxygen species (ROS) and an organism's ability to repair damage onset by the presence of ROS. Oxidative stress has been shown to contribute to the aging process. Vg content was measured via an Enzyme Linked Immunosorbent Assay and total antioxidant activity was measured using the ABTS de-colorization assay. Lifespan, Vg levels, and Antioxidant activity were significantly increased by OVX.

## **30. Which String Breaks? Revisited**

C. Frye, & \*C. Efthimiou

University of Central Florida

Many have seen the common introductory physics demonstration in which a heavy ball hangs from a string, with another identical string hanging freely from the ball. When the instructor pulls the bottom string slowly, the top string breaks. However, when the instructor pulls the bottom string very rapidly, the bottom string breaks. This simple experiment is used to demonstrate inertia and Newton's laws. In The Physics Teacher of November 1996, there is an article in which the authors attempt to explain this phenomenon quantitatively. However, their analysis gave strange results. Using their model, I show that all major qualitative aspects of this demonstration can be predicted quantitatively using simple calculations. The different outcomes of the demonstration in the cases of the fast pull and the slow pull are just two regimes of the solution to a single differential equation describing the motion of the mass.

## **31. Compulsory Voting**

S. M. Oldham

University of Central Florida

Faculty Mentor: N. Stanlick

Some politicians and citizens have raised the question about whether voting should be compulsory in the United States. There are many ways to qualify a yes or no answer to this question, but the most important part to look at is the morality of forcing citizens to vote. The proposal of compulsory voting can then be asked in a more definable way: Is it morally justifiable to make voting compulsory in a democratic nation? In this paper I argue that it is not ethically justifiable to force citizens to vote. I further explain

why it is wrong as it pertains to the United States, and why it is morally wrong in any democratic state. This paper will also address the major objections that can arise from this particular argument, and attempts to solve those objections by rendering their counter arguments insubstantial.

### **32. The Effects of Social Media on Life Quality**

L. Romero, & \*S. Nam

University of North Florida

With the popularity of social media growing, the question remains, is the quality of ones life growing or rather decreasing? I feel this question to be one of great importance because I often find myself engaged is what my peers call the act of “lurking”. The term “lurking” means to be on a social networking site looking at other people’s pages in order to discover something about that person. Many users find themselves on social networking sites and have become dependent on them as means for communication. For many people, social media is a happy medium, but at what point do we find ourselves consumed by them and our quality of life becomes diminished? My hypothesis is that heavy users of social media perceive themselves to have a lower quality of life.

### **33. An Investigation of the Role of the Glycoprotein Ependymin in Patterning the Vertebrate Nervous System**

<sup>1</sup>J. A. Colón, <sup>1</sup>G. C. Toro, <sup>1</sup>E. M. Nguyen, <sup>1</sup>G. Johnson, <sup>2</sup>A. Chandrasekhar, & \*<sup>1</sup>S. M. Bingham

<sup>1</sup>Barry University & <sup>2</sup>University of Missouri

Ependymin has been previously identified for its role in learning and memory. Here we introduce a potentially new function, as ependymin appears to also play a role in patterning the hindbrain. Morpholino knockdown of ependymin expression produces patterning defects in zebrafish cranial motor neurons. Following microinjection with morpholinos targeting ependymin, disruptions in hindbrain patterning were observed including loss of defined boundaries between: 1) trigeminal motor neurons (nV) in rhombomeres 2 and 3, 2) the facial (nVII) and vagal (nIX) neuronal populations in rhombomeres 6/7 and the caudal hindbrain, respectively. To validate the specificity of the observed phenotype, we made a DNA expression construct to over-express ependymin concomitant with morpholino treatment. We have started to examine hindbrain patterning in morphant embryos to determine whether the cranial motor neuron disruptions are the result of global defects in hindbrain patterning or due to neuron-intrinsic mechanisms. (NIH MBRS RISE R25 GM059244-10, Barry University)

### **34. Tracking distribution of nonnative marine species, *Mytella charruana*, *Perna viridis*, *Megabalanus coccopoma*, along southeastern United States**

S. Spinuzzi, \*K. Schneider, \*L. Walters, \*E. Hoffman, E. Nash, & W. Yuan

University of Central Florida

Tracking the spread of nonnative species is crucial for understanding how to control their populations. Since 2006, a biannual survey of the southeastern coast has been conducted from Jupiter, Florida to Charleston, South Carolina in order to determine the distribution of three marine invaders, *Mytella charruana* (charru mussel), *Perna viridis* (Asian green mussel), and *Megabalanus coccopoma* (acorn barnacle). We are currently monitoring 82 sites every June and December. Typically, the species are found on substrates such as docks, boat ramps, jetties, rock walls, and mangrove roots. The surveys show that the three nonnative species have established themselves in new locations, but the ranges of the species have expanded and retracted over the past few years. The survey data may lead to conclusions regarding how the species colonize a habitat and possible thermal and salinity tolerances that the species exhibit

### **35. Differential CD80 expression in Sjögren's syndrome-like autoimmune disease mouse model**

M. Onate, A. E. Gauna, S. Cha, & \*K. M. Pauley

University of Florida

Sjögren's syndrome (SjS) is a chronic autoimmune disorder that is characterized by dry eyes and dry mouth symptoms. These symptoms are a result of immune cell infiltration into the lacrimal (tear-producing) and salivary glands which cause destruction of these glands. Previous studies in our lab have demonstrated that in SjS, including human patients and a mouse model, miR-146a expression is significantly up-regulated. The objective of this study is to determine if antigen presentation is altered in SjS by downregulating CD80 via miR-146a upregulation. Ongoing screening for CD80 expression in the salivary glands of SjS-prone mouse models and control mice at the ages before, during, and after disease onset has shown that CD80 expression is higher in SjS-prone mice compared to control mice. Further studies are underway to investigate the effects of this aberrant expression of CD80 on antigen presentation.

### **36. Allele frequency variation among age classes at a reproductive protein: testing for density dependent sexual conflict**

N. Canton, & \*M. R. Gilg

University of North Florida

Sexual conflict is when the fitness of one sex increases at the expense of the fitness of the other sex due to differences in traits that maximize fitness in each sex. Previous studies suggest that different gamete recognition alleles may be favored at different sperm densities in marine invertebrates. Genotypes at gamete recognition loci may vary with the density of spawning males at that location. The M7 Lysin locus was focused on because it is a sperm binding protein that penetrates the vitelline envelope of the eggs. To test this hypothesis, mussels from southwestern England were collected from hybrid zones between *Mytilus galloprovincialis* and *Mytilus edulis* and parental zones. These sites varied in the density of spawning males where their larvae originated. M7 Lysin allele frequencies were estimated for each collection site to determine whether genotypes are associated with the population density of the source population. Research is currently ongoing.

### **37. Stop-Sign Recognition using Morphological methods, Sobel operators and Hough transform processing techniques**

S. J. Boyce, & \*C. M. Liron

Embry-Riddle Aeronautical University

If a camera is able to automatically detect a stop sign and bring a vehicle to a complete stop, the chance to avoid accidents, injury and death is greatly increased. The purpose of this research is to develop such an image-processing system, as a subsystem of a fully autonomous, reliable, and safe vehicle. This work aims at expanding GrayMatter's Plan B vehicle sensing capabilities while exploring applications in the agricultural, mining and military industries. Using a camera and a computer equipped with SIMULINK and MATLAB it is possible to record a vehicle's surroundings and pick out a stop sign. The computer program extracts the red color present in an image from a live video, removes excess coloring and text from the image, and finally pinpoints the octagonal shape of the stop sign. Finally, the edges of the sign are detected and plotted for future analysis.

### **38. Predictors of Perceived Oral Health Needs and Service Utilization among Florida Medicaid Enrollees**

A. K. Ware, & \*R. A. Boothroyd

University of South Florida

Oral health can be defined as "encompassing all the immunologic, sensory, neuromuscular and structural functions of the mouth and craniofacial complex." (Mouradian, 2001). However, Coughlin, et al., (2005) noted that Medicaid beneficiaries held the greatest unmet need for dental care, as compared to privately insured individuals. The purpose of our study was to approximate the frequency of self-perceived oral

health needs among Medicaid-enrolled adults and to identify demographic (6) and clinical (5) predictive of enrollees' self-reported oral health needs. The results suggest that age, education level, health status, mental health status, and substance abuse status, functional status, and receipt of supplemental security income were predictive of oral health needs. The full presentation will expand on these findings as well as summarize the service utilization and costs results.

### **39. Integration of Body Sensor Networks and Social Networks to Improve Healthcare**

D. Bauschlicher, S. Bauschlicher, & \*H. ElAarag  
Stetson University

Over the last decade, the demand for efficient healthcare monitoring has increased and forced the health and wellness industry to embrace modern technological advances. Body Sensor Networks, or BSNs, can remotely collect patient data and upload vital statistics to servers over the internet. Advances in wireless technologies such as cellular devices and Bluetooth increase the mobility patients experience while wearing body sensors. When connected by the proper framework, BSNs can efficiently monitor and record data while minimizing the energy expenditure of nodes in the BSN. Social networking sites play a large role in the aggregation and sharing of data between many users. Connecting a BSN to a social network creates the unique ability to share health related data with other users through social interaction. In this research, we propose to integrate social networks and BSNs to establish a community promoting well being and great social awareness.

### **40. The Oxygen Consumption of The Wild Type and Mutant T165V Oxalate Decarboxylase Enzymes**

L. N. Nguyen, M. Shukla, \*A. Angerhofer, & N. Richards  
University of Florida

Oxalate decarboxylase is a manganese containing enzyme which catalyzes the degradation of oxalate to carbon dioxide and formate. The enzyme also has inherent oxalate oxidase activity that converts oxalate to two molecules of CO<sub>2</sub> and one molecule of hydrogen peroxide. In this process, oxygen is consumed. In the T165V mutant, the open conformation is favored which is expected to show higher oxygen consumption as compared to the wild-type enzyme. The assay was carried out in 200  $\mu$ L reaction volume containing 10-12  $\mu$ g of the enzyme, 0.2% Triton X-100, and 50 mM acetate buffer at pH 4.2. The rate of oxygen consumption of the wild-type enzyme was found to be approximately three times greater than that of the T165V mutant. Based on previous findings, the wild-type enzyme was determined to have a decarboxylase activity of 80 U/min. Compared to the T165V mutant, it is approximately ten times greater. However, from this experiment, the decarboxylase activity of the mutant is greater than expected. This shows that the T165V mutant consumes oxygen during the catalysis reaction.

### **41. Dopaminergic Cell Death in the Substantia Nigra as a Result of Alpha-synuclein Knock-down**

<sup>1</sup>T.Z. Khundkar, <sup>1\*</sup>R.Mandel, & \*<sup>2</sup>F.Manfredsson

<sup>1</sup>University of Florida, <sup>2</sup>Michigan State University

Parkinson's disease (PD) is a degenerative movement disorder caused by reduced activity of dopaminergic cells in the substantia nigra. Alpha-synuclein ( $\alpha$ -syn) is found throughout the central nervous system and over expression of this protein correlates with the onset of PD symptoms. The pathway through which  $\alpha$ -syn induces the pathogenesis of PD is unknown but it has been proposed that decreasing the expression of  $\alpha$ -syn might alleviate neurodegenerative symptoms. However, we found that there is going to be significant death of dopaminergic (dopamine secreting) cells following  $\alpha$ -syn reduction. It has been proposed that  $\alpha$ -syn has a role in regulating the size of the synaptic vesicular pool and is involved in neurotransmitter release pathways. The aim of the project is to investigate how the reduction of  $\alpha$ -syn can cause increased intracellular dopamine and how an increase in intracellular dopamine leads to apoptotic cell death.

#### **42. A Survey of NCAA Athletes: Examining Differences in Perceptions of Coaches Based on Gender**

G.A. Poon, & \*E. Zitek

University of North Florida

As leaders are thought to need masculine characteristics in masculine domains, it is not surprising that men are more often given jobs as coaches in the male-oriented world of National Collegiate Athletics Association (NCAA) athletics. Even with the increase of female athletes in the NCAA, surprisingly, there has been a decrease in female coaches. Using questions from the Leadership Scale for Sport and the Athlete Satisfaction Questionnaire, we will be targeting co-ed teams from 6 different NCAA institutions with either a male or a female head coach and reporting on athletes' perceptions and satisfaction based on the gender of their coach. Using many of the same questions and the same method, we will also survey athletes at the University of North Florida who have both a male and female assistant coach.

#### **43. Stroke and Stem Cells: The Role of Tissue Plasminogen Activator**

H. S. Saluja, \*J. D. Mocco, & A. Afzal

University of Florida

Stroke is the leading cause of permanent disability in industrialized nations. Hematopoietic Stem Cells/Hematopoietic progenitor cells (HSC/HPC) are circulating bone marrow derived mononuclear cells that promote repair in areas of injury. Stromal Derived Growth Factor 1-Alpha (SDF-1A) along with its receptor CXCR4 is a potent chemo attractant released by areas of injury. The only FDA approved recanalization therapy for acute stroke is tissue Plasminogen Activator (tPA). However, our data indicate a detrimental effect of tPA on HSC/HPC function. Our data showed that HSC/HPC pre-treated with tPA had functional impairments possibly preventing these cells from homing to the area of injury.

#### **44. A Molecular Dynamics GUI**

K. McEwing, & \*T. Cickovski

Eckerd College

We present MDInter, a molecular dynamics GUI built with TKInter and Python. MDInter serves as an upper tier of the larger molecular dynamics problem solving environment, ProtoMol. This software layer operates independently of the other layers and offers an easy-to-use, friendly method for viewing simulations and testing the accuracy of numerical methods. We verify its success through a three-dimensional simulation of a 66-atom decalanine molecule.

#### **45. Mapping Several Temperature-Sensitive Vaccinia Virus Mutants to Individual Genes**

M. Soni, R. Antonia, B. McFadden, D. Jesus, R. C. Condit, & \*S. M. D'Costa

University of Florida

Vaccinia virus (~200kb DNA genome) is the prototypical poxvirus and was used as the vaccine in the eradication of smallpox. Although smallpox has long been eradicated, vaccinia virus is still a very useful yet simple tool that can be used to understand basic cell biology. The function of individual viral genes can be dissected out using conditional lethal virus mutants. Temperature-sensitive (ts) mutants are an example of conditional lethal mutants where in the mutant virus can be grown at the permissive temperature but not at the restrictive temperature. This allows us to understand the function of the mutated gene by analyzing the point at which the infection is aborted at the restrictive temperature. Recently, we acquired eight additional vaccinia mutants that were not represented in our previous collection and have renamed them Dts101-108. Using a technique called marker rescue mapping we have tentatively assigned three of the eight mutants to unique single genes.

#### **46. MicroRNA regulation of the inflammasome in Sjögren's syndrome**

L. Walker, A. J. Corsaro, K. Pauley, & \*S. Cha

University of Florida

The inflammasome is a multi-protein complex that is involved in activation of caspase-1 and secretion of the pro-inflammatory cytokines interleukin-1 $\beta$  (IL-1 $\beta$ ) and IL-18. ASC is the key component of the inflammasome. Upregulation of these cytokines is known to be important in the inflammation observed in Sjögren's syndrome (SjS). MicroRNAs are small non-coding RNA that target specific messenger RNAs for degradation or translational repression. Our previous study suggests that mir-383 most likely targets ASC mRNA. The objectives of my project are to confirm mir-383 regulation of ASC, determine functional consequences of this regulation, and understand ASC's overall involvement in SjS. To do this, THP-1 cells were transfected with mir-383 mimic and a negative control, and ASC expression was measured. IL-18 and IL-1 $\beta$  production was examined using ELISA. Our results demonstrated that miR-383 downregulates ASC protein and decreases IL-18 production. Further studies are underway to determine miR-383's role in SjS pathogenesis.

#### **47. Synergistic Portraiture**

S. Wider

University of North Florida

Faculty Mentor: D. Martorelli

My project consists of mixing a traditional 4x5 film based black and white image with a layered background created by using snapshots that I found of the subject on their Facebook profile. My idea is that an image only represents the physical aspect of a person and does not give any information about their personality, life style, etc. I want to create a comprehensive portrait that will give not only the physical information, but also details about who the subject is as a person. I chose to use the Facebook account of my subjects because that is how they choose to reveal themselves to others: through the new world of Social Media. My synergistic portrait mixes not only the physical aspect of the subject and information about who the person is, but also the new world of Social Media with the old one of traditional photography.

## *Keynote Address*



**Nicolas Michaud**

### *Care as a Necessary Condition for Successful Education*

Nicolas Michaud teaches philosophy at the University of North Florida, Florida State College at Jacksonville, and the Art Institute of Jacksonville. Having completed his master's degree in applied ethics and practical philosophy, he is now pursuing a master's degree in English and a doctoral degree in educational leadership. He presents regularly on issues regarding philosophy and education and maintains a philosophical specialization in freewill and moral responsibility. Over the past two years he has published over fourteen works in twelve different pop culture and philosophy texts. It is his belief that through bringing philosophy to the non-philosopher in exciting and relevant ways, he can encourage others to construct a world of ideas and understanding.



**University of West Florida  
Department of Environmental Studies  
MS in Environmental Science**

**The UWF Department of Environmental Studies faculty specialize in: Dendrochronology, Coastal Morphology and Policy, Landscape Ecology, Environmental Soil Science, Aquatic Biogeochemistry, Remote Sensing and Geographic Information Science (GIS).**

**Recent graduate student research has included:**

- **Recognition and impact of rip tides**
- **Environmental effects of prescribed burns**
- **Dechlorination of PCBs in estuarine sediments**
- **Environmental controls on Florida red tides**
- **Fire effects on environmental air quality (GIS)**
- **DDT in surface soils**

**For more information, please e-mail [environmental@uwf.edu](mailto:environmental@uwf.edu), phone (850) 474-2746, or just stop by the UWF campus, a 1,600-acre nature preserve of rolling hills and natural woodland along the Escambia River 10 miles north of downtown Pensacola.**

## ***Colloquia Session B***

**2:00 p.m. to 2:50 p.m.**

### **The Mentor-Protégé Relationship: What Works and What Doesn't**

**Room 3804**

C. Leone, L. B. Hawkins, M. Babcock, & M. Valente

University of North Florida

The Council on Undergraduate Research realizes the unique benefits of research collaborations between faculty and students. A key element in creating successful undergraduate research collaborations is effective mentoring. But navigating the faculty mentor-student protégé relationship can be fraught with challenges and pitfalls. Whether seeking a mentor as an undergraduate or preparing to establish a relationship with a mentor in graduate school, knowing the best ways to establish and maintain these mentor-protégé relationships can help students and faculty have productive, gratifying collaborations rather than unconstructive, disappointing conflicts. The panel will share strategies and provide a forum to discuss best practices in mentor-protégé relationships.

### **Off-Campus Undergraduate Research Experiences**

**Room 3805**

K. Schneider

University of Central Florida

There are numerous programs that invite undergraduates to leave their home institutions to conduct research. Opportunities are available at universities nationwide, as well as research facilities (e.g., the National Institute of Health). Undergraduates from all disciplines — from polar science to world politics, from computer vision to archaeology — can find research topics of interest to them. The majority of these research programs are available during the summer, with applications due in February and March. However, opportunities are offered throughout the academic year. This seminar will provide an overview of these opportunities including the typical application process, student requirements, and program structure. Several specific programs will be reviewed in detail. The seminar will also provide tips on how to find the right program for each individual student.

### **The University Library: Supporting (And Simplifying!) Your Research Needs**

**Room 3605**

D. Wrublewski & M. Ochoa

University of Florida

Have you ever wondered:

Why you can't find information on your topic from your go-to sources?

Where you may find reliable information for your topic or research area?

How can you easily but properly cite your sources?

As undergraduate researchers you are no doubt familiar with producing physical results for your projects and preparing scholarly presentations about them. As part of this process, you likely have used a variety of information sources, but may still get stuck and have some of the questions above. This presentation shows you how your University librarians can help answer those questions and more. Librarians will show you how to find subject-specific resources, including freely-available scholarly information sources and grey literature, for your background research. We will discuss limits and pitfalls of common search strategies and demonstrate ways

to maximize your research time by using controlled vocabularies and Boolean terms. Finally, we'll cover some basics on scholarly manuscript preparation, specifically focusing on tools to keep your research organized and cited correctly in your work.

### **Typesetting Professional Papers and Books For Publication**

**Room 3606**

C. J. Efthimiou

University of Central Florida

If you are a STEM major, the chances are that you have heard one of your instructors and/or advisors talk about TeX (or LaTeX) that has revolutionized scientific publishing. TeX/LaTeX is a typesetting programming language that was initially created to produce beautiful mathematical documents. However, TeX/LaTeX's popularity surpassed the expectations of its creator and has become useful for all disciplines. For example, if you are a chemist, you can design complicated chemical formulas; if you are a musician, you can write music; if you are a classic scholar, you can write polytonic ancient Greek and Hebrew; if you are a linguist, you can write in any of your favorite languages (e.g., Arabic, Chinese, Russian); if you are a chess lover, you can draw chess games. In this presentation I would like to introduce you to the world of TeX/LaTeX, demonstrate its power and explain how you can start immediately to write your documents using TeX/LaTeX, which is free and available for any platform.

## ***Poster Session C***

**3:00 p.m. to 3:50 p.m.**

**Ballrooms C & D**

### **1. Assessing Head Start Children's Motivation and Links with Alphabet Learning**

D. M. Weitzel, \*R. A. Marcon, C. M. Davis, M. A. Lochman, D. C. Sebille, S. M. Portis, & T. Kha  
University of North Florida

Early identification of school-related motivational problems could be beneficial for early intervention efforts. Assessing motivation in preschoolers is especially difficult because developmentally appropriate measures are limited. A sample of 71 preschoolers from families with lower-income in their second year of Head Start were individually administered measures of alphabet learning and components of motivation. Teachers were asked to rate participants in areas corresponding with different motivational orientations. Teacher ratings of socially-dependent motivation were found to be negatively related to preschoolers' self-reported enjoyment of school, self-confidence, instrumental activity and achievement motivation. Success in alphabet learning was positively related to self-confidence but negatively related to socially-dependent motivation. Further examination of this motivation-learning relationship identified differential patterns for younger and older children. High self confidence was related to higher alphabet knowledge for younger children but not older children. High social dependence was related to low alphabet knowledge for older children, but not younger children.

### **2. Activation of ACE2 Reverses Vascular Remodeling in Pulmonary Hypertension**

W. R. Kennedy, C. N. Bradford, V. Shenoy, & \*M. K. Raizada  
University of Florida

Diminazene aceturate (DIZE), an antiprotozoal drug, is has been recently identified for its potential therapeutic function against cardiovascular disease and hypertension. Our objective is to investigate the role of DIZE in the reversal of vascular remodeling in pulmonary hypertension. After an initial 50 mg/kg injection of monocrotaline, a toxin which induced hypertension, in SD rats, daily 15 mg/kg DIZE injections were administered over 14 days. Tissue samples were then extracted and analyzed via Western Blot and histopathological analyses, techniques that detect levels of specific proteins. DIZE was found to restore levels of bone morphogenetic protein receptor II (BMPRII), SMAD signaling proteins, as well as endothelial nitric oxide synthase (eNOS) expression, all of which are proteins that play a key role in healthy cardiovascular function. This restoration suggests DIZE plays a role in cardiovascular protection and serves as a potential antihypertensive therapeutic target in the treatment of CVD.

### **3. A Study on Time-Triggered Systems**

A. Hadding, J. Gittings, & \*J. Zalewski  
Florida Gulf Coast University

Real-time systems are deployed in situations that have critical time constraints. In such situations, a calculation that is late or missing may have expensive consequences, such as a vehicular collision. One type of real-time system is the time-triggered system, in which individual components of the system communicate at predetermined times. This communication strategy has multiple benefits: primarily, it prevents components from competing with each other for communication over the bus. Second, it means that the operation of the time-triggered system is deterministic, which is much more reliable than in traditionally designed real-time systems. In this paper, the results of testing a simplified anti-lock braking model are presented, to show the benefits of using a time-triggered system.

### **4. Individual differences in using illusions to cope with relationship loss**

A. M. Harris, R. A. Black, R. L. Gainey, & \*C. Leone, L. Bronzo,  
University of North Florida

There is evidence that people not only use positive illusions about their romantic relationships as a means for maintaining those relationships but also that such illusions contribute to relationship satisfaction and

longevity. In our study, we explored whether people used of negative illusions (e.g., unfavorable impressions of one's own former partners compared to impressions of typical former partners) as a means of coping with the loss of a romantic relationship loss and whether the use of these illusions was related to the disruption caused by the end of that romantic relationship. We also investigated the role of individual differences (e.g., masculinity-femininity, self-esteem, neuroticism) as moderators of the tendency to use these negative illusions to cope with the loss of a romantic relationship.

## **5. Predation on Red Mangrove Propagules in Mosquito Lagoon, Florida**

L. Stroud, M. Donnelly, & \*L. Walters

University of Central Florida

The red mangrove *Rhizophora mangle* reproduces by producing buoyant, viviparous propagules which may be damaged by predators. In 2009 and 2010 we monitored growth and damage to *Rhizophora mangle* propagules while attached to trees in Mosquito Lagoon, Florida. In both years, 300 propagules were marked at the beginning of germination at 3 sites and recorded predation damage bi-weekly until propagules were ready for dispersal. To identify potential predators, in 2010 we surveyed natural marsh (haphazard quadrats) and 15 *R. mangle* trees monthly of a 12 month survey, recorded all fauna observed on trees and in marsh, and identified individuals to lowest possible taxa. In August 2009 and 2010, over 75% of propagules had pre-dispersal damage along the exterior of the propagule. However, the presence of damage did not significantly affect propagule length and width relative to undamaged individuals, suggesting pre-dispersal damage does not negatively effect growth of propagules of *R. mangle* while attached to tree

## **6. "Love will keep us together" - Or not**

Dustin Thomas, David Beane, & \*Christopher Leone

University of North Florida

Romantic relationships are relevant in most people's lives. Much is known about the initiation and maintenance of these relationships, but relatively less is known about the termination of these relationships. In the research we just completed, we focused on the role of personal histories in the ways in which people cope with the demise of romantic relationships by measuring aspects of the dissolution experience: relational breakdown (e.g., declines in communication and/or shared activities), intra-psychic processes (e.g., ruminating, changes in self-concept), interpersonal processes (e.g., social withdrawal), relationship repair attempts (e.g., initiating or avoiding discussions of problems, using direct versus indirect repair strategies), and social support processes (e.g., seeking advice and emotional support). In our research, however, we also explored the moderating role of several personality variables in the construction of these personal accounts of the demise of relationships: general self-esteem, contingent self-esteem, and personal authenticity.

## **7. "Treat me like an officer—don't treat me like a female": An Analysis of Workplace Assignment**

K. F. Warren

Stetson University

Faculty Mentor: D. Everett

Historically, the prison has been considered a "man's world" (Britton 2003:1). However, over the past thirty years, female correctional officers increasingly have entered the field, but not without resistance from their male counterparts (Britton 2003:1–2). Guided by Joan Acker's (1992) theory of the gendered organization, this qualitative study used semi-structured interviews (N = 27) to examine how correctional officers' gender and the prison's custody grade affect officers' perceptions of their inclusion and exclusion in the workplace. Specifically, this investigation of correctional officers from two men's state prisons in the Southeast found that, with regard to their work assignments, various gendered processes serve to exclude all but a few select females from a vital "proving" ground, namely, using force against inmates. The fact that women are seldom considered an asset is exemplified in the female officer's plea, "Treat me like an officer—don't treat me like a female."

## **8. Raman Study of the Verwey Transition in Magnetite (Fe<sub>3</sub>O<sub>4</sub>) at High Pressure and Low Temperature**

<sup>1</sup>Z. A. Shirshikova, \*<sup>1</sup>L. Gasparov, <sup>2</sup>V. Struzhkin, <sup>2</sup>A. Gavriluk, & <sup>3</sup>H. Berger

<sup>1</sup>University of North Florida, <sup>2</sup>Geophysical Laboratory, Carnegie Institution of Washington, <sup>3</sup>EPFL, CH-1015 Lausanne, Switzerland

Semimetals are of major importance in modern condensed matter physics. Investigation of the processes occurring in semimetals may lead to new industrial applications of these materials. Raman laboratory at UNF concentrates its work on the Raman spectroscopy of such a compound- magnetite. Magnetite (Fe<sub>3</sub>O<sub>4</sub>) is the first magnetic material known to mankind and it is the earliest compound known to manifest a charge-ordering transition, discovered by Verwey<sup>1</sup> in 1939. A precise understanding of the mechanism of the Verwey transition will provide a new knowledge necessary for understanding this compound. Magnetite finds potential application in a new branch of physics (spintronics). The main goal of this new field is to engineer new materials where one could simultaneously control both electric and magnetic properties of the current carrying particles. The potential application of it includes such examples as improved data storage media, very quick and effective switches for telecommunication.

## **9. Development of the Bi-In-Sn-O System at 750°C for use in Solid State Gas Sensors**

R. J. Rahberg, & \*M. W. Lufaso

University of North Florida

Solid state gas sensors rely on changes in electrical conduction upon adsorption of a gas. SnO<sub>2</sub> and In<sub>2</sub>O<sub>3</sub> are commonly used compounds in commercial sensors for the detection of reducing gases. These sensors are adept at the detection of a large range of gases however, a lack of selectivity places limits on their use. We investigated the phase equilibrium of the Bi-In-Sn-O system as a way to develop new sensor materials. One goal is to provide greater control over the selectivity of the sensing material. The phase equilibrium diagram of the ternary system of Bi<sub>2</sub>O<sub>3</sub>, In<sub>2</sub>O<sub>3</sub>, and SnO<sub>2</sub> synthesized at 750°C was developed using the solid state synthesis method. X-ray diffraction was used to observe the products formed after reaction as well as for determining the crystal structure of individual phases. The structure-property relationships were investigated to further the understanding and development of solid state gas sensors. This study was supported with a grant from Sensor Arrays for Multiple Applications.

## **10. A Practical Study of Forensic Accounting Tools**

Elizabeth Waldo, & \*Hongmei Chi

Florida A&M University

The field of Forensic Accounting is gaining prominence in today's complex business digital world. Forensic accounting is a method of investigating financial transactions and business situations in order to obtain the truth of and develop an expert opinion regarding possible fraudulent activity. Fraud and forensic accounting affect the accounting profession every day. The use of Forensic accounting techniques, in conjunction with the understanding of various investigative methods, is improving forensic accountants, auditors and investigation officers' ability to examine and to take legal action against those involved in fraud and other corrupt criminal acts. The purpose of this poster is to analyze methods and digital forensics tools and to detect any possible data errors, irregularities, or fraud. In addition, we will give an overview for digital forensic tools and present a detailed analysis for comparing those tools.

## **11. Pneumonia Methyl-donated Hydrogen Bonds May Activate Attack on Victim Cells**

N. R. Timmins, K. B. Moore, A. N. Migue, A. Sirmans, & \*R. A. Vergenz

University of North Florida

*Streptococcus pneumoniae* Hyaluronate Lyase (spnHL) is an enzyme that breaks the protective coating of victim cells, exposing them to toxins. A network of hydrogen bonds in spnHL within a study fragment, met-248 through thr-253, located at the end of helix 3, exhibit characteristics of methyl-donated hydrogen bonds. Linear motion studies on three conformations show a hinge-like movement of the entire helix,

confirming literature reports which suggest the helix movement moves substrate into position for destruction. The study fragment is at the fulcrum of the hinge. Quantum mechanical force vector calculations have shown that this fragment creates a torque on the helix that rotates the helix in the same direction as the linear motion. We posit that the MDHBs contribute to the overall torque that rotates the helix and prepares the enzyme for activation. Further work will test whether these MDHBs act as a mediating switch for helix movement.

## **12. Hematopoietic Stem Cell Mobilization Following Stroke**

Annemarie Wolfe, & \*J Mocco

University of Florida

Stroke is the third most common cause of death in industrialized nations and the most common reason for permanent disability. Hematopoietic Stem Cells (HSC)/ Hematopoietic Progenitor Cells (HPC) are circulating bone marrow derived cells that promote repair. Stromal Derived Growth Factor 1-Alpha (SDF-1A) is released by areas of injury to allow HSC/HPC to “home”. Animals underwent cerebral ischemia and their HSC/HPC harvested and counted. Neurological deficit score was recorded prior to euthanasia and serum SDF1-A assessed in all groups. Bone marrow and blood showed an increased production of HSC/HPC at 4 hours and significantly higher at 24 hours. Mobilization of the HSC/HPC was slightly higher at 4 hours and significantly higher at 24 hours. Serum SDF1-A levels were elevated at 4 hours and 24 hours. These data suggest that SDF1-A mobilization of HSC/HPC in response to cerebral ischemia may be a relevant pathway for cerebral injury repair following stroke.

## **13. Spatio-Temporal Settlement Patterns of the Non-Native Green Mussel *Perna Viridis* in Northeastern Florida**

H. A. Sparks

University of North Florida

Faculty Mentor: M. R. Gilg

Studies over the past few decades have shown that the non-native green mussel, *Perna viridis*, has spread from its native Indo-Pacific range to much of the Southeastern United States, particularly Florida with the first documented sighting in 1999. As with any non-native species, it is important to study and document the newly established ranges of *P. viridis* to help determine the overall scale of dispersal. Local investigation into the spread of *P. viridis* has been conducted in the main channel waters and feeder creeks of the Intracoastal Waterway to study the dispersal patterns and spat abundance in each area over the course of the year. Experimental data suggests that in 2007 and 2008, spat abundance was much higher in the main channel waterways rather than the feeder creeks. A preliminary analysis of the spat collection for 2010 does not show high abundance compared to past studies and might be due to the harsh winter temperatures suffered that year.

## **14. Survival is not enough: universal mathematical functions governing coral population trends**

S. Sully, K. Llera, C. Cacciapaglia, S. Koksall, & \*R. van Woesik

Florida Institute of Technology

Projected climate change will drive ocean temperatures and seawater chemistry to levels outside the envelope of modern reef ecology. Consequently, reefs will change. Yet we know little about vital-population rates, which drive the changes in population structures and community composition. This study sought to quantify coral growth, partial mortality, and total mortality to determine whether we could estimate some universal constructs. The probability of growth of corymbose *Acropora* colonies followed the function  $pg(x) = \exp(-ax)$ , with  $a$  being a fitting parameter, suggesting that smaller corals experience a higher probability of relative growth. The probability of partial mortality ( $pp$ ), was given by the function  $pp(x) = 1 - pm(x) - \exp(-ax)$ , since the sum of probabilities of mortality ( $pm$ ) and survival is one. These functions are steps toward some universal functions encapsulating the mechanisms governing coral populations. Such quantifications are transferable to different species, across habitats, and can be incorporated into population models that predict trajectories through time.

### **15. Using Fuzzy Inference to Improve TCP Congestion Control Over Wireless Networks**

M. Wozniak, & \*H. ElAarag

Stetson University

While modern wireless networks have been in development for a couple of decades, the Transmission Control Protocol (TCP) which runs over those networks has existed since the mid 1970s. As it was developed before wireless networks were even conceived, TCP was not optimized to consider the physical characteristics of wireless network links. Specifically, TCP responds to packet loss due to link errors in the same way it responds to packet loss due to congestion: it cuts back the rate at which traffic is sent. A means of improving performance of TCP over wireless links is to classify packet losses, and react only to those losses perceived as being caused by network congestion. This research seeks to use environmental variables available to TCP implementations to feed a fuzzy inference system that will classify packet loss as due to congestion or random collision without sacrificing the end-to-end reliability of TCP.

### **16. Uncertainty and Intolerance of Ambiguity in Dynamic Decision Making Across Two Cultures**

A. Lazic, J. Graham, K. Lucas, M. Lovvorn, P. Fadil, & \*C. D. Güss

University of North Florida

Previous research has mainly focused on individual differences in dynamic decision making and only recent research has focused on the potential influence of culture on dynamic decision making (e.g., Güss, Tuason, & Gerhard, 2010). Cross-cultural studies on values have shown Germans to be more uncertainty avoidant than Americans (e.g., Hofstede, 2001). We therefore expected that a) German students would show less variation and flexibility in their decision making than American students in a novel situation, and b) overall, participants with high uncertainty and ambiguity avoidance would show greater stability in their decisions. Participants were 110 college business students from Germany and the United States acting as managers of a chocolate-producing company and responding to surveys assessing relevant constructs. Results did not support the first but the second hypothesis. Overall, high uncertainty and ambiguity avoidance was related to greater consistency and stability in decisions.

### **17. Multilocus phylogeography of Mexican free-tailed bats (*Tadarida brasiliensis*) on the Bahamian archipelago**

K. C. Magrini, & \*D. L. Reed

University of Florida

The Bahamas are interesting biogeographically because of the natural boundaries that exist between islands. *T. brasiliensis* is known for flying great distances at extraordinarily high altitudes, making them an exceptional case for examining species diversification and dispersal between islands and also the mainland of the US. Despite flight capabilities of bats, it has been proposed that ocean barriers make migration between islands unlikely in bats and that populations on different islands were likely distinct due to a lack of gene flow between islands. This research centers on identifying relationships between *T. brasiliensis* populations found in the Bahamas and Florida. We assessed the genetic structure within and among island populations and found evidence that the island bats are monophyletic and are genetically distinct from mainland bats. Furthermore, variation that occurred within sequences of bats from the same localities in the Bahamas suggests possible gene flow between islands of the archipelago.

### **18. Winter Patterns of Habitat Use by Adult Florida Snapping Turtles (*Chelydra serpentina osceola*) in a Northern Florida Spring-Fed Blackwater Stream**

<sup>1</sup>E. Suarez, <sup>1</sup>M. Kail, \*<sup>2</sup>G. Johnston, <sup>1</sup>S. Johnson

<sup>1</sup>University of Florida, <sup>2</sup>Santa Fe College

The Florida snapping turtle (*Chelydra serpentina osceola*) occurs in a wide variety of lentic (still water) and lotic (flowing water) aquatic habitats, but there are no published studies of *C. s. osceola* in lotic habitats. The Santa Fe River in northern Florida exhibits seasonal temperature fluctuations, but is fed by

dozens of thermally stable springs. We specifically address the question “How does temperature affect habitat use by *C. s. osceola* during the winter?” Our null hypothesis is that *C. s. osceola* uses spring and river habitats equally throughout the winter. We attached temperature sensitive dataloggers (ibuttons) and radio transmitters to free ranging turtles, distributed ibuttons throughout the study site. The null hypothesis was accepted for four individuals, but rejected for four individuals. Three other individuals occurred primarily in other habitats (e.g. beaver dens). Data suggest that *C. s. osceola* do not select the highest available temperature during the winter.

### **19. Creating a Brain cDNA Library from *Dasyatis Sabina*: A Step Toward Characterizing an Endocannabinoid Receptor**

C. N. Riggs, K. R. Newman, & \*G. L. Gerdeman  
Eckerd College

The endocannabinoid system is comprised of a family of lipid signaling molecules, their associated receptors, and metabolic enzymes. It is distributed throughout the body of vertebrates and is implicated in a number of physiological processes; therefore it is important to study from an evolutionary and comparative perspective. Cannabinoid-like receptors have been identified in bony fish and invertebrate protochordates, but their presence has yet to be studied in elasmobranchs. As an initial step toward characterizing this receptor, this project focused on the creation of a complementary DNA (cDNA) library from *Dasyatis sabina* (Atlantic stingray) brain tissue. The library was qualified using restriction enzyme digestion which led to the conclusion that transformation was successful. This library will be used to clone and sequence endocannabinoid-like receptors in these tissues and potentially other genes of interest from this elasmobranch fish.

### **20. Growth and Survival Responses of Seedlings and Cuttings of *Salix caroliniana* To Nutrients, Soil Types, and Water Availability**

L. M. Castro-Morales, J. Fauth, \*P. F. Quintana-Ascencio, L. McCauley, E. Stephens, & J. Navarra  
University of Central Florida

The expansion of *Salix caroliniana* is changing community composition in herbaceous wetlands at the Saint John's River, Florida, U.S. To understand the environmental factors that promote its spreading; we evaluated survival and growth of seedlings and cuttings under different soil types, nutrient levels, and moisture regimes. We analyzed variation in survival, change in height, crown diameter, and number of leaves. Seedling survival was lowest without nutrient addition and in sandy and low nutrient soils. Seedling height and crown diameter growth was highest in the high nutrient soil compared to the reduced watering and nitrogen treatments. Soil type affected cutting growth. Crown diameter growth was lowest for the low nutrient peaty soil. Number of leaves was lowest in sandy soils and reduced watering. Seedlings were more sensitive to soil, water and nutrient variation; cuttings were more plastic. These results indicated that emphasis should concentrate on control of early stages of colonization.

### **21. A Painful Interaction: Working with a Burdensome Group Member is More than Inconvenient**

A. S. LeRoy, & \*J. H. Wirth  
University of North Florida

Research suggests humans ostracize burdensome individuals to reduce stress on a group. We investigate whether the same pain that signals threats of ostracism also signal threats to a group, indicating when a burdensome group member should be ostracized. Participants played Cyberball with two computer controlled confederate players. Participants either played with two players taking an equal amount of time to decide to throw the ball, or with one player who took the standard amount of the time to throw the ball and one player who took 16 seconds to throw the ball. We measured social pain responses using self-report measures. We used a measure of burden to assess the participants' perception of the slow player and the number of tosses from the participant to the slow player as a measure of ostracism. Preliminary analyses show a significant difference in pain levels between the experimental groups.

## **22. Family Adjustment Measures Project: Assessing relational adjustment in parents of children with special needs**

V. N. Dominguez

University of Central Florida

Faculty Mentor: A. P. Daire

The Family Adjustment Measure Project (FAM) aimed to develop and validate a formal assessment that measures relational adjustment specific to families with children with special needs. We collaborated with national and local listservs to reach families that can participate in our online survey. Preliminary analysis of the FAM yielded four possible subscales: Parental Distress, Family-Based Support, Informational and Social Support, and Professional Support. The Relationship Assessment Scale (RAS) and the Perceived Stress Scale (PSS) were used to establish validity between the four FAM subscales and the RAS and the PSS. A factor analysis was conducted to find significant relationships among the items on the Family Adjustment Measure. The benefit of our research will help improve the techniques used by counselors to better assist these families.

## **23. The Effects of Arousal on Recall of Individuals Involved in Violent and Disgusting Events**

J.B. Yarnell

Florida Atlantic University

Faculty Mentor: J. Earles

The goal of this project is to form a better understanding of the effects that the degree of emotional response to a disgusting or violent event has on recall for key aspects of the presented event. It is expected that this research will show that memory for the disgusting or violent aspects of the events portrayed will be significantly higher than recall ability of other aspects in the video, such as the perpetrator and victim. Participants will complete a life events questionnaire and view one of two versions of a series of pre-recorded films. Participants will be randomly assigned to view either neutral or arousal versions of the same films, in which violent or disgusting events are portrayed. Following a week delay, participants will be shown video mug-shots of participants in each event demonstrating different facial expressions. We then examine the accuracy of recall of the actors within the films.

## **24. Algorithmic Composition With Genetic Algorithms**

P. S. Sante, M. S. Kisch, & B. A. Alkire

Stetson University

Faculty Mentor: N. Wolek

The goal of this project was to create a self-composing program driven by genetic algorithms, with percussive accompaniment generated using a euclidian distribution of cyclical rhythms. Though the tools have been created for these artistic purposes, they were generally limited in their scope of existing in a single computer system. This project has attempted to widen the scope of such composition, yet keep it manageable by allowing growth and change in a small networked environment. Instruments were then created independently by the players, rhythmically triggered by the program with harmonic and melodic constraints determined partly by the master computer but also at the player's own discretion insofar as what methods the notes inside their version of the program were generated. With the introduction of multiple computers the problem of 'inbreeding' in the data was drastically reduced allowing for much longer and more diverse compositions to emerge before stagnation occurred.

## **25. Fate-Mapping Intervertebral Disc Development Using the Lipophilic Fluorescent Labels DiI and DiA**

B. J. Bruggeman, & \*B. D. Harfe

University of Florida

Deterioration of the intervertebral disc is a primary cause of pain in the elderly. Understanding the mechanisms underlying disc development is critical for devising treatments for age-related disc degeneration. Current literature suggests that the mammalian disc is derived from sclerotome; however,

recent work in the Harfe lab has shown that chickens possess no defined disc structures like in mammals, but rather cartilaginous tissue between each vertebra. Our investigation aims to determine whether the sclerotome forms the avian disc, and if so, which specific cell population within the sclerotome. Preliminary fate-mapping data indicates that the sclerotome gives rise to the disc. We are using DiI and DiA double-labeling to determine whether the cranial or caudal half-sclerotome is responsible for forming specific disc regions, injecting one dye cranially and the other caudally within the same somite. Examination of labeled discs during later development will indicate which half-sclerotome is responsible for IVD formation.

## **26. Synthesis and Characterization of Hyperbranched Poly(3-oxetanol)**

C. L. Russo, M. R. Vashi, & \*A. T. Royappa

University of West Florida

Poly(3-oxetanol), a hyperbranched polyether-polyol, was synthesized by boron trifluoride-catalyzed cationic ring-opening polymerization in dichloromethane. This polymer is an analog of the more well-studied polymer, polyglycidol. Both polyglycidol and poly(3-oxetanol) are hyperbranched polymers. Because of this, and also since both these polymers are formed from monomers that may be considered anhydrides of the biocompatible molecule glycerol, they are under consideration for biomedical applications such as drug delivery. The spectral and thermal properties of poly(3-oxetanol) were analyzed and compared to those of polyglycidol.

## **27. Effects of embryonic ethanol exposure on zebrafish cranial motor neuron development**

N.C. Delva, C. Lynch, A. Nicholson, L. Sinaise, J. Cadet, & K. George

Barry University

Faculty Mentor: S. Bingham

The nervous system is susceptible to the effects of teratogen exposure. It is one of the first organ systems to begin development and continues developing throughout embryogenesis and beyond. Embryonic exposure to ethanol may result in developmental delays and severe cognitive deficits. In humans, ethanol exposure at critical periods of development may result in nervous system and cranial defects known collectively as Fetal Alcohol Syndrome. We are investigating the effects of ethanol exposure on developing zebrafish embryos, specifically, the incidence and severity of defects in cranial motor neurons and craniofacial cartilage. We are treating zebrafish embryos at different stages of development, for different periods of time, to identify the critical period for ethanol exposure as it pertains to cranial motor neuron defects. Preliminary results suggest cranial motor neuron mispatterning may arise even in the absence of obvious morphological defects in the developing embryo. (NIH MBRS RISE R25 GM059244-10, Barry University)

## **28. Biochemical Evidence of Endocannabinoid Signaling in the Cephalochordate Lancelet, *Branchiostoma floridae***

K. Newman, C. Riggs, & \*G. Gerdeman

Eckerd College

On a systems level, cannabinoids (phyto-, endo- or synthetic) are known to modulate a diversity of processes both in the central nervous system (CNS) and peripheral tissues, via actions on membrane bound cannabinoid (CB) receptors expressed by target cells. The principal known endocannabinoid ligands are the arachidonic acid derivatives anandamide (AEA) and 2-arachidonoyl glycerol (2-AG). In order to better understand the evolutionary origins of endocannabinoid physiology, we are investigating AEA and 2-AG levels in the lancelet *B. floridae*, also known as Amphioxus, a model protochordate that occupies a key, basal position in the phylogeny of all vertebrates. This lab developed a quantitative assay using GC-MS instrumentation to measure endocannabinoids present in the purified lipid profile of *B. floridae*. This assay will also be of future use in analyzing endocannabinoid content in other marine organisms like the Atlantic Stingray (*Dasyatis sabina*).

### **29. Examining Psi**

J. R. Watson, & \*E. Zitek

University of North Florida

The purpose of this study is both to replicate and extend Dr. Daryl Bem's Retroactive Facilitation of Recall experiment (Bem, in press) from his recent paper demonstrating evidence of ESP, or precognitive abilities. We will test participants' ability to recall certain words that they have been exposed to prior to the test but more rigorously practiced after said test. Hence, we are testing whether studying some words AFTER the test leads those words to be better remembered on the test. Participants will also be given surveys asking questions about their levels of stimulus seeking (which Bem showed relates to precognitive abilities) as well as questions about whether they have experienced tumultuous life events (i.e., growing up in a rough neighborhood, being personally threatened), which we believe may influence the development of precognitive abilities. Participants will be tested both individually as well as simultaneously alongside others to determine if having additional people present affects precognitive abilities. We predict that participants who are higher in stimulus seeking as well as tumultuous life events will be more likely to exhibit the precognitive abilities. We also predict that participants who are tested in the presence of other participants will exhibit greater capacity for said precognitive abilities.

### **30. The Ascent of Love: On the Movement of Love, From the Aesthetic to the Transcendent**

S. Schroeder

University of Central Florida

Faculty Mentor: M. Strawser

How should we best understand love? I have researched the growing area of the philosophy of love in the attempt to illustrate an ascent through multiple spheres of love, beginning with the aesthetic sphere, including narcissism and self-love, and moving toward an ethico-religious love of the other. In doing so, I draw a distinction between inauthentic and authentic forms of love, from self-centered eros to self-giving agape. Through works from phenomenology to fiction, I detail the difference between the states of falling in love and being in love, and the determining role that choice plays in the relation. Finally, I turn to the transcendence of love, in which the lover can move past the self, past the romantic relation, such that love becomes a guiding ethical principle in the just society.

### **31. Mobilizing Your Marketing and Commerce Strategies – A Research Study to Inform the Hospitality Industry**

A. Anderson, & T. Sorbo

University of Central Florida

Faculty Mentor: J. Hogg

The recent and rapid growth in mobile platforms has created opportunities for the hospitality industry to create new mobile marketing and sales strategies. Mobile marketing employs tools to geo-locate the guest and target specific marketing for their location. A new mobile commerce model has been created by the ability of some mobile devices to hold digital credits for sales transaction through mobile applications. By linking mobile marketing with mobile commerce, hospitality organizations can create convenience for their guests, widen their market penetration, and increase sales while increasing guest mind share. The study will survey attendees as well as hospitality professionals and organizations during national and international conferences to gather data from all participants within the commerce model. The data will be examined using SPSS 17 and the findings will be published to provide valid and reliable information for the hospitality industry to develop mobile strategies for m-marketing and m-commerce.

### **32. Datedness of Child Stimuli Influences Adult Perceptual Salience and Stress Response**

A. L. Schulhauser, & \*G. Ybarra

University of North Florida

This study explores relations among cognitive, emotional, and psychophysiological (e.g., cardiac function, skin conductance, and respiration rate) responses of adult participants to two versions of child-

related stressors. Previous research evidenced that participants reporting negative responses would also report less pro-social and seemingly less effective parenting plans to a hypothetical parenting situation than would their non-hyperreactive counterparts. Such excessive responses could include aggressive behavior or inappropriate distancing from an infant in need. This investigation compares the participants' perception of the stressors, while considering an older versus a contemporary version. Our objective is to evaluate whether differing responses to stimuli are displayed by the participants through several self-reported and continuous psychophysiological measures. The reactivity assessed will further expound on previous findings in relation to prosocial and antisocial responses to child stressors and the potential causes.

### **33. Using Standing Waves to Make Quantitative Measurements**

D. S. Bonderczuk, M. A. Balogun, & \*Joseph Mosca

Embry-Riddle Aeronautical University

The world we live in is very noisy. These sounds are longitudinal vibrations of air molecules that are interpreted by our brain as pleasant, or irritating. They need not be transferred to us solely by air. In addition to being able to travel through air, sound waves can also travel through liquids and even solids. An interesting acoustical phenomenon occurs when one or more places on a solid are held in place while periodic vibrations are introduced. It is called a standing wave. The purpose of the following experiment is to quantitatively analyze standing waves first demonstrated qualitatively in Seattle AAPT Winter 2007 and use them to determine various properties of the wave itself and the medium through which it travels.

### **34. Self-monitoring and inclusion of other in the self**

N. Hofmann, J. Kindelsperger, & \*C. Leone

University of North Florida

High self-monitors have a large number of friends and spend little time with each friend; low self-monitors have a small number of friends and spend a great deal of time with each friend. These self-monitoring differences have implications for processes in friendships such as self-expansion. As friendships develop, friends increasingly include their view of their friends in their sense of self. We hypothesized that high self-monitors' inclusion of close friends and casual friends in their sense of self would be approximately equal and low self-monitors' inclusion of close friends in their sense of self would be greater than their inclusion of casual friends in their sense of self. Our results confirmed these hypotheses and indicated that these self-monitoring differences were not a confound between participants' self-monitoring and participants' sex. These findings expand the psychological literature on self-monitoring and friendship as well as the role of self-expansion in friendship maintenance.

### **35. The Impact of High School setting on College Preparation Programs and Student Success in Higher Education**

M. L. Pruitt

University of Central Florida

Faulty Mentor: A. Donley

This mixed methods study examined the impact of high school setting on college success. Rural and urban students are more likely to drop out of high school than their suburban counterparts. When parents' income and education are low, so is the effectiveness of their children's school programs. The present study measured the effect of High School College Preparatory Programs on college readiness, preparedness, and success. A survey was administered to 450 college and university students from three counties in Central Florida. Two focus groups, consisting of six to ten students each, from two of the counties were also conducted. The qualitative data was analyzed to provide context for interpreting the quantitative data.

### **36. Building a Linux Cluster**

R. Dunn, & \*H. Chi

Florida A&M University

What better way to prove the importance of clustering, then building one from scratch and comparing its performance to normal computers. The Computer Science Department at Florida A&M University as just upgraded the computers in its laboratories. The University was gracious enough to allow me to use six of their old machines. We plan on connecting the six machines by building a Beowulf Cluster. By having such hands-on experience, our students will have visual experience for HPC. This paper attempts to address these challenges by inspiring the interest of students, preparing students to the concepts of parallel and multi-core. In addition, we present a pragmatic approach of teaching parallel computing designed particularly in response to the background of our graduate and undergraduate students. Using a hands-on approach allows students to use and understand both the hardware and the software of parallel systems. We will give examples for our own cluster and hands-on labs for students.

### **37. Hypoxia-mediated cell death and phenotypic selection**

<sup>1</sup>V. R. Santos, <sup>\*2</sup>R. J. Gillies, <sup>1</sup>A. I. Hashim, <sup>1</sup>J. W. Wojtkowiak, & <sup>1</sup>A. Silva

<sup>1</sup>University of South Florida, <sup>2</sup>Moffitt Cancer Center

Understanding the consequences of tumor progression has importance to both basic and applied cancer research. Using green fluorescent protein expressed ductal carcinoma in situ cells (least invasive properties among breast cancer cells) kept in buffered and glucose rich media; cells were cultured in 2% of normal oxygen conditions. Each day for ten days, one tissue culture dish is removed and counted for viability, toxicity, pH, lactate concentration, and total cell count. These counts are then compared to a control kept in the incubator. Once 20% of the original sample remained viable, the cells were returned to normoxia and allowed to reach 80-90% confluence. New cultures are passaged from the hypoxia treated cell line and the experiment is repeated. Extreme physical environments such as anoxia will select cells that are resistant to apoptosis (programmed cell death) and the mechanism of resistance will be different in differing cell lineages.

### **38. Deficit Irrigation of Turfgrass Systems**

M. R. Sciardi

Santa Fe College

Faculty Mentor: D. Guerin

An increased demand on limited water supplies has led to a growing interest in landscape irrigation for turfgrasses such as 'Empire' zoysiagrass. Deficit irrigation, a practice of irrigating in an amount below that of the plant's maximum water demand, has been utilized to reduce water use in a variety of turfgrass species. I conducted an experiment researching the different deficit irrigation amounts on 'Empire' zoysiagrass. Twice a week the turf was tested for overall color, quality and stress levels. The results showed a decrease in water deficit irrigation effects the overall quality of 'Empire' zoysiagrass. The greater acceptability of water deficit strategies to conserve water will occur if little loss in color, quality and stress can be assured, however that shifting from 0% to 25% to 50% to 75% irrigation deficits resulted in a decrease in overall turf quality for all treatments. My results showed that a 0% deficit treatment was most suitable for the overall quality of 'Empire' zoysiagrass.

### **39. Photovoltaic Electrolysis**

A. L. Maitland, J. Pompey, D. Cameron, & \*J. Mosca

Embry Riddle Aeronautical University

The goal of this project is to explore the feasibility of producing hydrogen gas by using photovoltaics to power electrolysis of water. The first step will be to determine amount (volume/mass) of hydrogen that can be extracted from a given amount of water. We will also need to determine the optimal amount of current/potential difference needed to extract the hydrogen from the water. Once the electric requirements are determined we can determine the requirements for the photovoltaics.

#### **40. Survivability and Remembering; What is Adaptive about Adaptive Memory?**

<sup>1</sup>R. Seaman, <sup>1</sup>E. Beatrice, <sup>1</sup>A. Leedy, <sup>2</sup>K. Baker, & \*<sup>1</sup>M. Toglia

<sup>1</sup>University of North Florida, <sup>2</sup>Auburn University

Within cognitive psychology there has been a recent flurry of studies that address the notion that human memory evolved to assist the remembering of fitness-relevant information. The current experiment was designed to further examine this issue via recall of thematic word lists that varied in survival relevance. The lists were semantically processed for either pleasantness or survivability. Less veridical memory was observed with survival encoding than pleasantness, and survival processing produced more false memory, “remembering” words that were not studied, than processing for pleasantness. Survival-relevant lists yielded greater veridical memory, but also greater false memory than survival-irrelevant lists. Additional analyses examined output order of false memories, a methodology wherein the position of a participant’s false recall in their written protocol provides a window into the remembering process. Findings are discussed in terms of theories of illusory recollection and their significance to adaptive memory.

#### **41. Preterm Piglet Model for Investigation of Preterm Human Neonatal Comorbidities**

D. Lennon, G. Panjeton, A. Veling, T. Zanganeh, H. Allen, & \*P. Borum

University of Florida

Preterm piglets are an adequate model for preterm human neonates because they have similar anatomy, physiology, and development. However, studies report piglets less than 90% gestation are non-viable, despite intensive care. The objective was to show that piglets delivered less than 90% gestation are viable and exhibit comorbidities frequently observed in preterm human neonates. Piglets were delivered around 87% gestation via cesarean section. A pediatric surgeon implanted an endotracheal tube and a double lumen jugular vein catheter. The piglet was provided 24-hour care in the Piglet Neonatal Intensive Care Unit (PNICU), including ventilation and parenteral nutrition. The piglet became ventilator dependent and experienced several episodes of abnormal movement accompanied by fluctuations in oxygen saturation and heart rate. The lungs were severely damaged, the jejunum was bloody, and the retina was immature. Piglets delivered less than 90% gestation are viable and can be used to investigate comorbidities of preterm human neonates.

#### **42. Unintentional Plagiarism in Young and Older Adults**

S. F. Rowell & \* J. L. Earles

Florida Atlantic University

When shown actors performing different actions, older adults have difficulty remembering who performed which actions. In the current study, it is expected that the deficit that causes this will also cause older adults to have difficulty remembering which actions are self-generated, resulting in greater unconscious plagiarism. There were two parts to the study. In the first part, participants saw 30 objects. For half of the objects, the participants watched someone else perform an action and for the other half, they were asked to perform a specific action. The second part was a week later. Participants were shown 30 old objects and 15 new objects and asked to generate a new action that could be performed with each object. Then they were shown all 45 objects and asked whether they had watched an action with that object in the previous week, performed an action with it, or had not seen it.

#### **43. The Therapeutic Potential of the Angiotensin Converting Enzyme 2/Angiotensin-[1-7]/Mas Axis in Pulmonary Hypertension and Lung Fibrosis**

D. Pourang, V. Shenoy, & \*M.K. Raizada

University of Florida

Current therapeutic strategies for pulmonary hypertension have not been promising in halting progression of the disease nor improving the quality of life for those affected. The disease is usually not detected until its advanced stages, so the prognosis is fatal. The angiotensin-converting enzyme 2/angiotensin-[1-7]/Mas receptor axis is a component of the renin-angiotensin system and has been implicated in the pathophysiology of pulmonary fibrosis. Previous studies have shown that a heightened level of

angiotensin-converting enzyme 2 (ACE2) and angiotensin-[1-7] (Ang-[1-7]) had a protective effect in rats with pulmonary hypertension. My objective is to determine the mechanism by which this axis confers protection against pulmonary hypertension and lung fibrosis. I infected healthy alveolar epithelial cells in vitro with a virus that heightens levels of ACE2 and Ang-[1-7] and then added bleomycin, a drug that induces pulmonary hypertension. A significant reduction in cell death after ACE2 and Ang-[1-7] overexpression was observed.

#### **44. Salvation Mountain: Expanding the Notion of Expressive Individualism**

V. Machado

University of Florida,

Faculty Mentor: D. Hackett

I traveled to California to investigate the man-made desert sculpture known as Salvation Mountain. For my paper, I use Salvation Mountain and its creator Leonard Knight to argue in favor of expressive individualism and the ways it redeems our culture. By critiquing and expanding upon religion theorist, Robert Bellah's, notion of individualism, I argue that Leonard Knight's Salvation Mountain displays the emergence of an individualized yet universal spirituality that has taken root in American culture by way of the Christian faith. This individualism, which I explain through the context of American popular culture and with the help of social justice groups, charts a path to the universal value of God's love for all people.



## Notes

