Research Abstracts

PANEL 1 - From an Anthropological Perspective: Community Engagement, Ethnographic Field Work and Disaster Relief

Community Archaeology and Capacity Building: The 2017 Estate Little Princess Archaeological Field School in St. Croix

By Dr. Justin Dunnavant, *Anthropology, University of Florida*

The relationship between archaeologists and stakeholder communities has become a topic of increasing concern and introspection for researchers within the field. In collaboration with several NGOs, archaeologists, and heritage professionals, the Estate Little Princess Archaeological Field School based in St. Croix expands the practice of community-engaged archaeology into the realm of capacity building. Thus, we are concerned not only with including communities in the design, implementation, and dissemination of research but specifically in training local youth in archaeological practices with the hope they will explore archaeology as a career option and/or at least gain a better appreciation for cultural and natural heritage. Within this framework, the crux of community-engaged archaeology is capacity building. To this end, the Estate Little Princess Archaeological Field School combines one week of terrestrial archaeology and oral history training with one week of maritime archaeology to give students experience in the rigors of archaeological training and practice.

Writing an Autoethnography/Narrative Dissertation

By Lorraine Monteagut, *Communication Sciences and Disorders, University of South Florida*

This presentation examines my dissertation, which took the form of an autoethnography, or a personal narrative based on ethnographic field work. I discuss the methods I used to collect data and write my story, focusing on how a personal narrative thread can help synthesize data while showing universal applications of theoretical concepts. This kind of qualitative research bridges many disciplines and can provide insight to researchers in any of the social sciences, including anthropology, sociology and psychology.

Community Archaeology and Heritage on Inishbofin, County Galway Ireland

By Katie Shakour, *Anthropology, University of South Florida*

This research explores how communities react and remember disaster through time. Disasters are often conceived as short-term, natural catastrophes, but they are always both social and natural and often impact communities for years or even decades. Employing archaeological, historical and ethnographic methods, this project examines local, regional and national responses to social upheaval caused by a series of famines, including the Great Famine in nineteenth-century Ireland. Through a case study on Inishbofin, an island five miles off the western coast of Ireland, I conceptualize the responses to the famine by households and communities using the concept of the taskscape to understand the movement of people and goods. My research investigates how communities use the past to construct heritage related to famines and the resulting social upheaval. It also examines the ways in which communities construct heritage around a negative event through community involvement in the research. This work reframes how anthropologists can understand response and long-term framing of past negative events.

PANEL 2 - Contemporary Research in the Biological Sciences with a Focus on Extracellular Matrices, Horizontal Gene Transfer, and the Herpes Simplex Virus

Herpes is for Life: Phenotypic Analyses of Viral Micro-RNAs in HSV-1 Pathogenesis

By Enrico Barrozo, *Biological Sciences, University of Florida*

Herpes simplex virus type-1 (HSV-1) is the cause of the common cold sore. Recent epidemiology data suggests approximately 50-90% of the population is latently infected by HSV-1. Following acute infection, HSV-1 establishes latency in sensory neurons by curbing lytic gene expression except for a select few noncoding-RNAs. These ncRNAs include viral micro-RNAs and the latency-associated transcripts, which have been shown to facilitate latency and reactivation. Phenotypic analyses of recombinant viruses lacking individual viral miRNAs aim to determine the biological significance of miRNAs H1, H6, & H8. In cell culture, we observe up to 13-fold increases in viral yields for a virus lacking H1/H6 and 9-fold decreases for H8. Ongoing analyses in the mouse model will further characterize the roles of these viral miRNAs in vivo, including the ability of HSV-1 to maintain latency and periodically reactivate. Understanding the functions of these miRNAs may help elucidate viral latency and lead to new gene therapy strategies for preventing reactivation.

Evidence for Horizontally Transferred Enzymes Expressed During Early Development in the Ctenophore Mnemiopsis Leidyi

By Alexandra Hernandez, *Biological Sciences, University of Florida*

Horizontal gene transfer (HGT) is the transfer of genetic material between organisms. A growing body of literature shows HGT occurs between non-animals and animals. Despite many convincing reports, controversy over the occurrence of HGT in animals persists due to methodological challenges. In this study, we present a thorough investigation of HGT in the ctenophore (comb jelly) Mnemiopsis leidyi. Using BLAST and rigorous phylogenetic approaches, we identify HGT candidates, eliminate false positives, and narrow candidates to a list of nine HGTs likely transferred early in ctenophore evolution from bacteria and non-animal eukaryotes. All but one of these HGTs (an uncharacterized protein) appear to perform enzymatic activities. We found that many of these HGTs were expressed during early development, suggesting these genes are active and play a role in the biology of M. leidyi. This is the first report of HGT in ctenophores, contributing to ever-growing literature on the flow of genetic information between non-animals and animals.

Disruption of a Specific Extracellular Matrix Structure in the Model Organism Caenorhabditis Elegans Activates Antioxidant, Osmotic, and Antimicrobial Stress Defenses

By Keon Wimberly, *Medical Sciences, University of Florida*

Cells in living tissues secrete proteins and carbohydrates to create an extracellular matrix (ECM), a dynamic, physiologically active component. Barrier ECMs are the surface line defense to environmental stressors such as heat, toxins, and pathogens. Cytoprotective genes respond to these stressors and help mediate chemo-resistant cancers in humans. It is thus vital to gain understanding of their physiology and regulation. Molecular pathways that mediate cytoprotective responses on an *intracellular level* are well characterized, but very little is known about how ECMs may interact with underlying tissues following stress exposure. I am exploring a novel signaling paradigm where ECM disruptions alone can regulate induction of cytoprotective genes. Since cytoprotective genes are conserved amongst many living organisms, I utilize the model organism *C. elegans*. Through a gene knockdown experiment, I identified a novel gene (*itr-1*) that helps activate cytoprotective genes following ECM disruption. This work may lead to favorable outcomes for cancer patients.

PANEL 3 - An Examination of Corporate Accountability Structures, Diversity and Entrepreneurial Social Networks and Their Impact on Governance

When Does Racial and Gender Diversity Pay?

By Inger Daniels, *Business, University of Central Florida*

The study uses panel regressions to examine the relationship between firm value and racial and gender diversity in S&P 1,500 firms during 1996 through 2016. For a sample of roughly 22,550 firm-year observations, results indicate a convex relationship between the share of non-traditional directors and firm value. The share of non-traditional directors is negatively related to firm value at token levels of participation (no more than 15%); as the share of non-traditional directors moves beyond 25%, the total impact of non-traditional directors on firm value begins to turn positive. To address endogeneity concerns, the study uses the Sarbanes-Oxley Act and the Supreme Court 2003 affirmative action decision in *Grutter v. Bollinger* as outside influences to the supply and demand of non-traditional directors. Furthermore, non-traditional directors are more effective board members in the post 2003 era. Their reduced board memberships, improved attendance record, and increased committee services may explain the enhanced impact of non-traditional directors on firm value after 2003.

Community Social Capital on Entrepreneur Network Characteristics and Firm-Founding

By Reginald Harris, *Business, Florida State University*

This study will merge two streams of research. One stream examines the effect of regional-level community social capital (CSC) on entrepreneurial social networks. The other examines the effect of the individual-level social capital derived from entrepreneurial social networks on the success of new firms. This study includes 1,261 participants selected through a randomized telephone survey to identify individuals in the process of developing new firms. The study used a regression-based analysis to test hypotheses at a level of $p < 0.05$. Tentative results indicate that a new firm is more likely to emerge if entrepreneurs 1) engage in specific activities, such as opening a bank account and building a website; and 2) develop a greater diversity of supporter relationships, such as nurturing long term and newly found supporters and a mixture of professional and personal relationships. Hence, entrepreneurs need to reach beyond an initial group of core supporters to successfully launch a new business.

The Rise of the Benefit Corporation…An Idea Whose Time Has Come?

By Nadra Pencle, *Business, University of Central Florida*

This research reports the results of qualitative work, including eighteen interviews with owners and executives, conducted to examine how and why benefit corporations (BCs) evolve. It also discusses the accountability structures at these establishments. These issues are important since BCs are the newest corporate legal structures in the United States and have been gaining momentum since the first BC statute passed in Maryland in 2010. A cross-sectional analysis of interview data and other documentation was used to examine the research questions against the Social Business Enterprise (SBE) framework developed by Dillard et al. (2013). Interview participants were convinced that options for required BC certifications offer companies a way to intricately weave corporate social responsibility (CSR) and sustainability practices throughout their organizations. They also felt that acquiring and maintaining multiple certifications help BCs remain accountable to pluralistic stakeholders. This research offers supplemental information to the growing CSR disclosure stream and presents collaborative opportunities for companies currently offering assurance services to value-driven organizations.

PANEL 4 - Chemical Applications: Odor Detection Devices, Azasugars as Pharmaceutical Agents, and the Uses of Functionalized Derivatives

Utilization of Controlled Odor Mimic Devices to Improve Law Enforcement Canine Training

By Alice Boone, *Chemistry, Florida International University*

Upon completion of this presentation, attendees will understand the advantages and shortcomings of odor detection canine training, the benefits of using mimic training aids, and how odor recognition validation tests are conducted during canine trials. Canines are reputable for their ability to detect and distinguish between large varieties of odors. However, advances in the use of odor detection canines are necessary for the enhancement of its scientific validity. Controlled Odor Mimic Permeation Systems (COMPS), a patented process developed by FIU scientists, ensures consistent and measurable delivery of a wide variety of target odor compounds. It allows for reduction in detection bias that may otherwise result from differences in odor vapor pressure and volatility characteristic of various odor compounds. The versatility, reproducibility and low cost of this technology have the potential to revolutionize canine training and minimize deficiencies. Results from this study validate that utilizing COMPS is a safe and effective training tool for law enforcement canines.

Identification of the Azasugar Biosynthetic Signature in Chitinophaga Pinensis

By Claribel Nunez, *Chemistry, University of Florida*

Essential biological processes such as immune response, tumor metastasis, and cell-cell regulation involve glycosidase enzymes. Azasugars are potent and highly specific inhibitors of glycosidases and have garnered a lot of attention, due to their potential as pharmaceutical agents and agrochemicals. The synthesis of azasugars, however, is very difficult; thus identifying the enzymes responsible for their biosynthesis and understanding how to produce them is of great interest. Using bioinformatics, we identified a signature gene cluster in *Chitinophaga: Gene_2152, Gene_2153, and Gene_2154* that encodes for a putative phosphatase, zinc-binding dehydrogenase, and aminotransferase, respectively. Analysis of the components of the culture extracts from Chitinophaga led to identification of a pyrrolidine azasugar, a potent α-glycosidase inhibitor. In this study, we present evidence for the characterization of the azasugar and the enzymes responsible for initiation of its biosynthesis. Through genetic engineering, these enzymes have potential to serve as a platform for stereoselective and efficient biosynthesis of a diverse range of azasugars.

Lanthanide-Based Metal-Organic Frameworks Based on Custom-Designed Macrocyclic Ligands

By Chavis Stackhouse, *Chemistry, University of South Florida*

Polyazamacrocycles and functionalized derivatives have been employed recently as organic ligands in the construction of extended metal-organic frameworks (MOFs). Incorporating azamacrocycles into the MOF architecture has the propensity to merge the chemistry of MOFs with supramolecular chemistry of the macrocycles, but also brings out novel properties from the hybrid frameworks produced. Employing nitrate salts of La3+ and Eu3+ with functionalized azamacrocyclic ligands 1,4,7,10-tetraazacyclododecane- N, N', N'', N'''-tetra-p-methylbenzoic acid and 1,4,7-triazacyclononane-N, N', N''-tri-m-isophthalic acid, respectively, yielded two lanthanide based Metal Macrocyclic Frameworks (MMCF), MMCF-3 and MMCF-4. The frameworks have been characterized using powder x-ray diffraction, single-crystal X-ray diffraction, infrared spectroscopy, and thermogravimetric analysis. They exhibit a vacancy of the macrocycle cavity unprecedented for azamacrocycles in coordination chemistry. The availability of these sites makes it possible to coordinate newly introduced metals to produce heterometallic frameworks, which could exhibit intriguing properties and usages in sensing applications.

Research Abstracts

PANEL 5 - Effective Teaching Methodologies in STEM

My Culturally Responsive Teaching Journey as a Mathematics Methods Instructor

By Lakesia Dupree, *Math Education, University of South Florida*

Practicing educators often recommend that doctoral students prepare to teach in a culturally responsive way. Given such recommendations from the field and the fact that doctoral students increasingly supervise and instruct in teacher education programs, there is a need to further investigate the culturally responsive teaching practices doctoral students model and teach when working with prospective teachers. This self-study investigates my journey as a mathematics teacher educator in my quest to provide prospective teachers with the means to become culturally responsive elementary mathematics teachers. The results highlight the four major themes that explain changes made to my teaching practices during the fall 2016 semester to support this quest. Study results support the infusion of culturally responsive pedagogy into doctoral education as a means to prepare future mathematics teacher educators.

A Study of Select Physics Teachers' Beliefs on Implementing Culturally Relevant Practices in the Classroom

By Clausell Mathis, *Education, Florida State University*

This qualitative study investigated high school, community college, and university physics instructors' beliefs about implementing culturally relevant practices in the classroom. Each participant (n=10) was interviewed using a semi-structured protocol that aligns with the major domains of culturally relevant pedagogy identified by Ladson-Billings (1995), which are academic excellence, cultural competence, and critical consciousness. Data was analyzed through an a-priori coding approach using the Culturally Responsive Interactive Protocol by Powell and Rightmyer (2011). Results showed that the teachers were most willing to include important community issues within the classroom and use students' knowledge and experiences in their instruction. Findings suggest a need for further research into developing a culturally relevant approach in physics that uses students' cultural resources as a pedagogical tool.

Effects of Instructional Strategies Based on the Music Model of Academic Motivation on Undergraduate Mathematics Students' Engagement, and on Subject Learning

By Nefertiti Puplampu, *Education, Florida State University*

STEM subjects in undergraduate coursework persist as points of challenge and defeat for many students. Research has shown that positive, engaging learning experiences lead to student success in STEM fields. Improving the learning experience of students by improving classroom motivation in mathematics classrooms is therefore a timely and highly promising step. This study uses recent emergent research in learning motivation to test the feasibility of implementing the MUSIC® Model of Academic Motivation (Jones, 2009, 2015) in an undergraduate mathematics classroom to assess possible learning and engagement gains.

PANEL 5 - Effective Teaching Methodologies in STEM

Teaching Socioscientific Issues in an Evolving Context

By Selene Willis, *Education, University of South Florida*

With the recent focus on standardized testing, scientific literacy is declining in the United States. A more robust theoretical framework is needed to guide education. The Socioscientific Issues (SSI) framework is a progressive approach to Socioscientific pedagogy that promotes scientific literacy while developing multiple morality based constructs including social and moral compassion. This study used that framework to explore 1) students' epistemological reasoning related to social and moral compassion; 2) the role of scientific evidence in the context of students' reasoning about moral and ethical issues; and 3) challenges faced by the teacher in establishing a sociocultural normative classroom. While past studies showed measurable success, this SSI implementation showed low quantitative success; only empathic concern was significant. The qualitative data provided more nuanced indicators of epistemological sophistication and suggest it is difficult to capture and differentiate SSI outcomes related to social and moral compassion. More studies need to be completed to further understand and elaborate how students develop the tenets of social and moral compassion within the SSI framework.

PANEL 6 - Neuroscience: An Examination of the Olfactory Bulb as Metabolic Sensor and Autism-Related Gastrointestinal Disorders

Neuromodulation of the Voltage-Gated Potassium Ion Channel, Kv1.3, by Glucagon-Like Peptide 1

By Genevieve Bell, *Neuroscience, Florida State University*

Our sense of smell, olfaction, is intimately linked with metabolic state and feeding behavior. Our laboratory has pinpointed the olfactory bulb (OB) as a metabolic sensor, particularly the mitral cells (MC), the major output neurons of the OB, which are responsible for sending signals to higher-order brain regions. Important metabolic factors such as insulin and glucose can increase MC firing frequency *via* modulation of the voltage-gated potassium channel, Kv1.3, ultimately modifying olfactory behaviors. Herein we investigate if the gut hormone, glucagon-like peptide 1 (GLP-1), can modulate Kv1.3 activity. cDNA of Kv1.3 and the GLP-1 receptor (GLP-1R) were heterologously expressed within Human Embryonic Kidney (HEK) 293 cells and stimulated with 10uM of GLP-1. Patch-clamp electrophysiology revealed novel evidence of a significant decrease in channel conductance following GLP-1 stimulation, while immunoprecipitation of phosphorylated proteins following GLP-1 stimulation revealed serine residues as a possible site of post-translational modification. These data expand upon research showing that feeding-related hormones shape olfactory ability and ultimately food choice.

PANEL 6 - Neuroscience: An Examination of the Olfactory Bulb as Metabolic Sensor and Autism-Related Gastrointestinal Disorders

The Gut-Brain Axis: Models of Gastrointestinal Distress in Autism Spectrum Disorders

By David James, *Neuroscience, University of Miami*

Autism Spectrum Disorders (ASDs) affect more than 2% of children world-wide and are caused by a range of factors, including genetic mutations. Along with the behavioral and developmental issues observed in diagnosis, there are a number of co-occurring symptoms, including gastrointestinal (GI) distress, which severely impact quality of life. This research explores the mechanism(s) behind this GI distress in an attempt to provide possible routes for alleviation. We believe the effect of mutations that impact neural function extends beyond the brain into other neurally regulated organs such as the GI tract. To determine the mechanisms behind this GI distress, we use a zebrafish model of Phelan-McDermid Syndrome (PMS), which is a genetic form of ASD. This form of ASD is caused by mutations in the SHANK3 gene, which codes for proteins critical to neuronal communication. The many parallels between our animal model and human physiology provide a basis for understanding the mechanisms that underlie ASD-associated GI distress.

PANEL 7 - Advances in Biomedical Engineering: An in-depth Analysis of Binaural Hearing Aids, Sensorineural Hearing Loss, and the Usefulness of Carbon Dioxide Sensors

The Potential Benefit of Hearing Aids for Listeners with Normal Hearing and Subjective Listening Difficulties

By Karen Bell, *Communication Sciences and Disorders, University of South Florida*

Difficulty understanding speech in noise is a common complaint of veterans with normal hearing and traumatic brain injury. It is common for VA audiologists to fit these veterans with binaural hearing aids to alleviate this perceived difficulty. Subjective reports from these listeners reflect a perceived benefit; however, there is currently limited objective data to support this claim. The purpose of this study is to evaluate the benefit of hearing aids in noise for listeners with normal hearing sensitivity, especially for those with cognitive deficits. This study will evaluate the perception of nonsense syllables and structured sentences in noise (competing talkers) using simulated hearing aids. Listeners will identify the target stimulus using a computer interface. Performance on speech perception measures will be tested against measures of cognitive function to examine the relationship between cognitive function and speech perception in noise.

PANEL 7 - Advances in Biomedical Engineering: An in-depth Analysis of Binaural Hearing Aids, Sensorineural Hearing Lose, and the Usefulness of Carbon Dioxide Sensors

A Combinatorial Approach to Protect Against Cisplatin-Induced Ototoxicity

By Nicole Febles, *Biomedical Engineering, University of South Florida*

Sensorineural Hearing Loss (SNHL) is a multi-faceted degenerative condition usually resulting in permanent damage to the cochlear mechano-sensory hair cells needed for proper hearing. Ototoxic drugs are one of the major causes of SNHL, including Cisplatin, a very effective chemotherapeutic, resulting in a 65% SNHL incidence. Currently no FDA-approved prevention/treatment for SNHL exists, making ototoxic attenuation a major area of focus in oncology and hearing research. Therefore, we employed our approach of utilizing multiple otoprotective agents, resulting in an in-vitro otoprotective effect on a Cisplatin-induced ototoxic cellular model. More specifically, HEI-OC1 cells were seeded for 24 hours and incubated with respective otoprotective agents or IFN-γ -free growth media for 24 hours. Cisplatin was added to all conditions except control prior to initiation of cell viability, DNA fragmentation and protein expression studies. Our cocktail of agents significantly increased cell viability as well as protected against DNA fragmentation and intrinsic and extrinsic apoptosis when compared to Cisplatin alone, suggesting a promising Cisplatin protection.

Computational Model for an Implantable Carbon Dioxide Sensor

By Teshaun Francis, *Biomedical Engineering, Florida International University*

Carbon dioxide is an important part of our natural respiratory function; it directly influences the strength and rate at which we breathe. For this reason, carbon dioxide is a critical biomarker to monitor in the Intensive Care Unit, especially in patients with impaired respiratory function. Current biomedical carbon dioxide sensors, however, lack in functionality. Continuous sensors that measure expired carbon dioxide are inaccurate, while the gold-standard blood-gas analysis is anything but continuous. We have come up with a continuous carbon dioxide sensor design that can be implanted directly at the source, the extracellular space, and we will build a mathematical model to simulate performance of the device under various conditions before construction. Our aim is to validate the model by comparing its response to experimental results of a prototype.

PANEL 8 - PART 1 - Innovations in Environmental Science and Engineering: Effective Ways to Manage Hydroponic Systems, Urban Storm Water Runoff, Nitrate Contamination, and Aquaculture Systems

Nitrification of Ammoniacal Nitrogen Recovered from Synthetic AnMBR Permeate *via* a Reusable Nutrient Recovery System for Hydroponic Lettuce Cultivation

By Jorge Calabria, *Civil & Environmental Engineering, University of South Florida*

Wastewater treatment processes remove materials that jeopardize human and environmental health. Recovering nutrients from the wastewater treatment process could provide a renewable source of fertilizer with potential to support local horticulture and urban agriculture in resource-limited areas. Furthermore, efficient nutrient recovery can reduce material and energy demand of wastewater treatment facilities. Natural clinoptilolite zeolite, a form of volcanic mineral rock, was utilized for its ability to selectively capture ammoniacal nitrogen from aqueous streams to develop a renewable nutrient recovery system (RNRS). The proposed RNRS recovered greater than 90% of total ammoniacal nitrogen from the synthetic waste stream tested. To demonstrate feasibility for integration with low footprint horticulture, captured nitrogen was released into an aqueous solution utilized for lettuce cultivation in a vertical hydroponics system. Nutrient recovery and delivery facilitated by the proposed RNRS supported adequate crop development. Further optimization of the RNRS system is required to enhance nutrient delivery, thus increasing feasibility of integration with various horticultural applications.

An Environmental Justice Approach to Mainstreaming Sustainability in Communities of Color *via* Multifunctional Green Infrastructure: An East Tampa Case Study

By Maya Carrasquillo, *Environmental Engineering, University of South Florida*

Green infrastructure, which was originally designed to improve management of urban stormwater runoff, is growing in popularity throughout the United States. Previous studies suggest green infrastructure serves municipal efforts towards urban sustainability, providing additional social and health impacts such as reducing crime. However, there is limited research to support this claim. The goal of this research is to identify community-driven, multifunctional uses for green infrastructure, employing a complete sustainability approach (i.e., environmental, social, and economical). This research uses both quantitative and qualitative analyses to assess the following: (1) current community pathways of engagement with green space, (2) resident perceptions and recommendations about green infrastructure uses, and (3) the spatial relationship between green infrastructure, food access and crime. Preliminary observational data and GIS spatial data *via* ArcMap 10.3.1 have been collected to develop a proof of concept for this sustainability approach within East Tampa. Continued work will assess green infrastructure implementations and expansion of green space pathways as community access points.

PANEL 8 - PART 1 - Innovations in Environmental Science and Engineering: Effective Ways to Manage Hydroponic Systems, Urban Storm Water Runoff, Nitrate Contamination, and Aquaculture Systems

Use of Iron-Sulfur Minerals for Biological Nitrogen Removal from Small Community Water Systems

By Erica Dasi, *Environmental Engineering, University of South Florida*

Nitrate is a common contaminant present in small community water systems (CWS). Conventional nitrogen removal technologies have high energy and/or chemical cost and produce waste that is difficult to dispose. This project seeks to develop a biological nitrogen removal process targeted for small CWS that uses low cost materials, no chemical feed systems, and eliminates the need to dispose of waste. More specifically, it seeks to examine the use of various iron-sulfur minerals to mediate the biological removal of nitrogen (i.e., denitrification). Microcosm experiments were performed to evaluate the individual denitrification performance of ferrous sulfide, pyrite, pyrrohotite, and sphalerite. Measurements for the nitrate, nitrite, sulfate, and ferrous were recorded to monitor denitrification performance. This project will extend knowledge by providing information on the appropriate iron-sulfur minerals to use in biological removal of nitrogen from water. Further, it has the potential to provide an inexpensive and sustainable nitrogen removal technology catered to small CWS.

Simultaneous Denitrification and Off-Flavor Compound Removal in a Tire Sulfur Hybrid Adsorption Denitrification (T-Shad) Reactor

By Dr. Laura Rodriguez-Gonzalez, *Environmental Science & Engineering, University of South Florida*

Recirculating Aquaculture Systems (RAS) are a high production and reduced ecological impact alternative to traditional fish farming. Water recirculation in RAS, however, promotes off-flavor compounds in the fish and can result in accumulation of NO_3-N, that can impact aquatic species and receiving waters. Current removal processes for NO_3-N require controlled carbon inputs that can be ineffective and costly. We investigated an alternative Tire-Sulfur Hybrid Adsorption Denitrification (T-SHAD) treatment that can remove NO_3-N and off-flavor compounds in RAS. In a bench-scale RAS, T-SHAD limited NO_3-N removal to 21%, with no significant removal of off-flavor compounds, probably due to a low contact time of only 185 minutes. Improved performance of T-SHAD was observed when applied as a polishing step with a contact time of 720 minutes, removing 96.6% of NO_3-N and 69.6% of off-flavor compound GSM. While sulfate production needs care, T-SHAD presents a viable alternative for RAS that can also reduce off-flavor compounds such as GSM.

PANEL 8 - PART 2 - Innovations in Environmental Science and Engineering: Effective Ways to Manage Domestic Wastewater, Anthropogenic Pollution, Water Catchments, and Wildlife Near Estuaries

Can Passive Onsite Nitrogen Removing Bioreactors Meet Effluent Quality Requirements for Irrigation Reuse?

By Michelle Henderson, *Environmental Engineering, University of South Florida*

In the United States, approximately 25% of domestic wastewater is treated in onsite wastewater treatment systems. Onsite systems are inefficient at removing nitrogen and pathogens, making them a risk to public health and the environment. Our research group is currently evaluating passive onsite nitrogen removing bioreactors, with and without an ion exchange medium, to treat excessive nitrogen released from septic systems. This study evaluates these systems for fecal indicator bacteria (FIB) removal and suggests system improvements for onsite irrigation reuse. Hourly studies were conducted to investigate the overall E. coli removal in the bioreactors and determine which period experienced the greatest FIB removal. Results showed on average 88% removal of E. coli throughout both bioreactors and differences in E. coli removal between systems that are not statistically significant. Greatest FIB removal efficiencies were observed in the evening period when flows were highest. This research may improve FIB removal using tertiary treatment.

Managing Nutrients in Urban Stormwater Runoff Through a Field Study of a Modified Bioretention System

By Emma Lopez-Ponnada, *Environmental Engineering, University of South Florida*

Urban stormwater runoff is one of the largest diffused sources of anthropogenic pollution impairing surface water bodies. It carries a nutrient of concern for surface waters, reactive nitrogen. When found in excess, eutrophication occurs, leading to fish kills and affecting community well-being. Bioretention systems are constructed with natural materials such as sand, gravel, and native plants to reduce flooding and improve the quality of stormwater runoff. However, conventional bioretention has not been efficient at removing nitrogen. In this study, a modified system was designed to remove nitrogen via denitrification processes by including an anoxic zone with a solid organic substrate, woodchips. Field-scale conventional and modified systems were set up side-by-side, and influent and effluent water samples were collected and tested for nitrogen concentrations. About 70% total nitrogen (TN) was removed by the modified system, while the conventional removed approximately 40%. Results demonstrate that the enhanced biological and physical processes within the modified system successfully improve TN removal from stormwater runoff.

PANEL 8 - PART 2 - Innovations in Environmental Science and Engineering: Effective Ways to Manage Domestic Wastewater, Anthropogenic Pollution, Water Catchments, and Wildlife Near Estuaries

Behavioral Plasticity of Schooling Fish in a Dynamic Environment

By Ivan Rodriguez-Pinto, *Biological Sciences, Florida International University*

In an environment with many sources of sensory signals, collective behavior may be modulated by variation in ambient conditions, such as habitat complexity. To investigate whether collective responses of self-organized systems is modulated by the external environment, I monitored schooling fish in an estuary and observed their behavior when under threat of predation. Collective behavioral responses of fish schools were collected *via* acoustic imaging in coastal estuaries of Calcasieu, LA. The collective responses were compared across habitats with open-water and habitat complexity. Five main schooling metrics were extracted from each collective response, including area, speed, rotation, polarization, and correlation strength. Preliminary results demonstrate that habitat complexity affects the collective behavioral response of a school to a predator attack, suggesting that the external environment influences collective behavior and that behavioral plasticity exists to compensate for dynamic environmental shifts. These results highlight the importance of understanding the role of external physical factors in the behavior and design of self-organized systems.

A New Model for Vertical Seepage in Karst Lake Environments

By Chris Slater, *Civil Engineering, University of South Florida*

Proper resource management of water catchments is essential to communities, wildlife, and industry. However, in the past, geoscientists and hydrologists have over-simplified hydrologic model parameters of lakes, which has led to inaccuracies in the lake leakage rate, due to model inapplicability. To support West-Central Florida, engineered hydrology and hydrogeology calibration techniques were used to discover water budget dynamics for selected lakes within the domain. We have produced a new model including additional, necessary parameters to test lake beds in karst lakes. Surface water interactions with aquifers were modeled with the Hydrological Simulation Program-Fortran (HSPF) application and Geographical Information System (GIS) was used for spatial analysis in addition to potentiometric surface depiction. After comparing data collected with our model to lake content data collected over a 16-year period, our model was shown to more accurately forecast vertical seepage, which is important for developing appropriate water budget assessments and optimal water resource management strategies.

PANEL 9 - Crime and Punishment: An Examination of Racial Profiling and the Relationship Between Social Learning Variables and Criminal Behavior

Stop, Question, and (Cognitive) Dissonance: Social Control Agents and Justifications for Racial and Ethnic Disproportionality in Vehicle Stops

By Miltonette Craig, *Criminology, Florida State University*

While law enforcement's use of criminal profiling—relying on a set of specific traits believed to be associated with crime—is generally accepted, such actions become problematic when they appear to be discriminatory in nature. One of the most frequently examined and contested profiling tactics is related to the use of race/ethnicity to determine which drivers to stop for traffic violations. Although much research exists on the constitutionality of racial/ethnic profiling as well as the existence of and attitudes toward this practice, the literature has not yet addressed the thought processes of social control agents regarding the appearance of racial/ethnic bias within their own enforcement practices. To address this gap, the current study focuses on official written responses from Missouri police agencies in reaction to evidence of racial/ethnic disparities within their mandatory annual vehicle stop reports. A qualitative analysis is conducted using Chiricos and Eschholtz's (2002) Racial Typification of Crime/Criminal Typification of Race and Sykes and Matza's (1957) Neutralization Theory, and results are explained.

Self-Control, Delinquent Peers, and Delinquency

By Jorge Hernandez, *Criminology, Florida State University*

Gottfredson and Hirschi's self-control theory views the relationship between social learning variables and crime as spurious because both are a result of low self-control. In the present study, a different possibility is considered—specifically, social learning variables may be causally significant for delinquency by virtue of operating in conjunction with low self-control. This study empirically tests both mediating and moderating arrangements between low self-control, social learning variables, and delinquency. First, low self-control is argued to have effects on delinquency that are mediated by social learning variables. Second, effects of low self-control are expected to be conditional upon social learning variables, such that the effects of low self-control are amplified among individuals with greater delinquent associations and definitions. These hypotheses are tested with data from a large sample of adolescents.

PANEL 10 - Modern Trends in Physics Research: A Focus on Electronic Interplays and Superconductivity, Isotopic Analysis and the Effects of Functional Mutation Upon Thermostability and Folding

Investigating the Stable Phases of Osmates for Superconductivity by Molecular Beam Epitaxy

By Tommy Boykin II, *Physics, University of Central Florida*

Superconductors are advantageous in many applications, e.g. quantum computing and high-speed trains. Current superconductors, such as Sr_2RuO_4, require significant and expensive cooling. Sr_2RuO_4, in the 214 phase has the potential to be a superconductor at higher temperatures; however, it has never been synthesized. In an effort to synthesize and produce possibly-superconducting Sr_2RuO_4, metallic SrO-OsO_2 thin films were grown on (001)-oriented $SrTiO_3$ and Lanthanum-Strontium-Aluminum-Tantalum (LSAT) substrates by molecular beam epitaxy as a function of substrate temperature from 480 to 650 °C. X-ray diffraction showed that crystallographic phase of the resulting film depended on substrate temperature. Temperature dependent resistivity was measured by four-probe method from 300 to 4 K. The lowest room temperature resistivity achieved was 0.467 mΩ-cm for a film grown at 480 °C. While we did not synthesize the 214 phase, we found other phases, and our results suggest we may find the 214 phase by replacing Strontium (Sr) with calcium.

Incorporating a Functional Mutation into a Symmetric Scaffold as Proxy for Functional Adaptation *via* Rearrangement of its Folding Nucleus

By Connie Tenorio, *Physics, Florida State University*

Proteins are remarkable biopolymers comprised of connected building blocks called amino acids, of which 20 common types are found. These blocks (residues) form chains and coalesce to form a folded structure known as a protein. Thus, for a protein that is 150 amino acids in length there are 15020 possible sequential arrangements that would determine the three dimensional shape the protein would take. Evolution has only sampled a few of this staggering number of potential sequential arrangements. Understanding the structural and functional properties that can arise in the folding triggered by the sequence is the main objective of protein design. This research focuses on traversing the world of de novo protein design by using the underlying axioms of physics that rule the molecular world of protein folding and stability. Thus far we have generated a super stable scaffold that tolerates the energetic penalties incurred throughout the design process.

PANEL 11 - Improving Public Health: Understanding the Significance of Breast Feeding and Pregnancy Risk

Factors Associated with Breastfeeding Duration: Positive Social Influence of Infant's Grandmothers

By Alexis Barr, *Public Health, University of South Florida*

Breastfeeding benefits both mother and infant, but U.S. breastfeeding duration rates still fall short of recommendations. Postnatal depression (PND) negatively impacts breastfeeding duration. Infant's grandmothers (maternal and paternal) also may play an important role in infant feeding decisions. This study evaluated the relationship of maternal PND and social influence (SI) of infants' grandmothers on breastfeeding duration (weeks). Data from 2258 women who indicated initiating breastfeeding on the Infants Feeding Practices Study II (2005-2007) were analyzed using Cox regression (survival analysis). PND was measured using the Edinburgh Postnatal Depression Scale. SI was measured as each grandmother's opinion of infant feeding weighted by the importance of her opinion to the participant. Preliminary results indicate that, the pro-breastfeeding SI of both grandmothers is positively associated with longer breastfeeding duration and remains significant when controlling for PND. Future research and interventions should leverage the SI from infants' grandmothers by including them in the conversation about breastfeeding practice.

The Power of Perception: Women's Perspectives on Chronic Illness and Pregnancy

By Tanica Minnis, *Nursing, University of Central Florida*

Chronic illness in women during reproductive years can lead to high-risk pregnancies, poor maternal outcomes, and death. In fact, the Center for Disease Control and Prevention identifies chronic illness as a leading factor in increased maternal mortality rates, and studies indicate that a woman's perception of pregnancy risk is an overlooked and complex concept that directly impacts maternal health outcomes. Thus, the objective of this project is to identify how women with chronic illness perceive their pregnancy risk and how risk perception influences the health behavior and management of their chronic illness. The study examined a small sample of chronically ill women during their reproductive years (ages 18 through 40) through semi-structured interviews focusing on their pregnancy experiences with chronic illness and risk perception. Interviews were reviewed for commonality and theme. Continued research is indicated to study how women with chronic illness understand their pregnancy-related risks. This project serves as a guide for future study and will assist with developing effective intervention and strategies of care for women.

Self-Objectification in the Context of Breastfeeding: A Concept Analysis

By Christine Toledo, *Nursing, University of Miami*

Due to infant and maternal health benefits and cost effectiveness, breastfeeding is part of the Healthy People objectives. While breastfeeding in the United States continues to increase, close to 20% of U.S. mothers never initiate breastfeeding. Qualitative research suggests self-objectification of young, new mothers may affect a mother's decision not to breastfeed, however no clear definition of self-objectification exists. Thus, we performed a concept analysis (Walker & Avant method) to clarify self-objectification in the context of breastfeeding and define its antecedents, attributes and consequences. Antecedents include living in a culture of sexualization and objectification of women, internalizing these values, and adopting self-body perceptions based on others' judgment of one's appearance. Attributes include preoccupation with physical appearance and prioritization of appearance over benefits of breastfeeding. Consequences include increasingly negative views towards breastfeeding initiation and duration and toward public breastfeeding. Further research should determine whether the 20% of mothers who do not initiate breastfeeding are indeed self-objectifiers. If so, tailoring interventions to this population may meet breastfeeding goals.

PANEL 12 - Chemistry and its Practical Applications to Cystic Fibrosis, Chemotherapies and Other Anticancer Agents

Identifying Potential Cystic Fibrosis Therapeutics by Investigating Small Molecules Capable of Correcting Protein Misfolding

By Taylor Harris, *Chemistry, University of South Florida*

Cystic Fibrosis (CF) is a genetic disorder caused by mutations of the cystic fibrosis transmembrane conductance regulator (CFTR), a Cl–channel. The most common CF mutation, ΔF508 (ΔF508-CFTR), exists in the nuclear binding domain 1 (NBD1) of the CFTR protein. Current CF therapies are symptomatic treatments, while very few are used to treat the mutated CFTR protein itself. The purpose of this project was to identify small molecules capable of binding to and stabilizing the NBD1 region of ΔF508-CFTR, with the goal of improving current protein restoration treatments. Computational programs such as ProBiS, LiSiCA, and Schrodinger (Glide and SiteMap) were used to predict binding sites and binding interactions with several compounds. The data obtained from the computational efforts were validated using differential scanning fluorimetry assays to determine the stabilizing effects of the compounds on purified ΔF508-CFTR from E. coli. The melting temperature of ΔF508-CFTR increased in the presence of biliverdin and dicyclohexylurea, suggesting these compounds exhibit some stabilizing effects.

Selective Targeting of Cancer Stem Cells in Prostatic Tumors *via* a Self-Assembled Nanocarrier

By Kimberly Stewart, *Chemistry, University of Florida*

Standard chemotherapies are reasonably efficacious in the elimination of primary tumors, owing to their differentiated cell types, but they are only minimally effective in the eradication of cells with pluripotent character. To address this limitation, we have previously selected for a cancer stem cell (CSC)-targeting aptamer that has been shown to bind to 90% of stem-like cells within a prostatic tumor model. This high affinity aptamer, CSC01, is readily modified through chemical conjugation and is presented in this work as the targeting moiety within an aptamer-tethered DNA nanotrain (aptNTr). Our molecular probe is self-polymerizing, biocompatible, maintains selective recognition of its molecular target, is able to transport and deliver an array of anticancer agents, and can induce maximum therapeutic effect.

PANEL 13 - Frontiers in Educational Research: An Examination of Low African American Student Engagement in Foreign Language and Social Studies

Black Students' Experiences and Motivation to Pursue Foreign Language Study at an HBCU: A Holistic Single Case Study

By Derrick Pollock, *Education, Florida State University*

The purpose of this study is to contribute to the epistemological research on Black students in higher education situated in the foreign language context, in addition to understanding low enrollment of Black students in foreign language courses. This study will employ a qualitative research design, chronicling the experiences of 10 to14 Black college-aged junior and senior standing students at an HBCU. The research will explore the influences of students' former and current experiences on their motivation to pursue foreign language study utilizing a situative theoretical approach to motivation. Further, it will examine the role of situative motivation in relation to student's cultural, social, and educational experiences. At the completion of this study, the results should reveal that multiple factors influence Black students' motivation to pursue foreign language studies at the collegiate level.

A Phenomenological Study of Black Students' Experiences in Their Fifth-Grade Social Studies Classroom

By Irenea Walker, *Education, University of Central Florida*

Black students' apathy regarding social studies is evident in criterion-referenced assessments. Furthermore, research has indicated that students in K-12 social studies classrooms are unequivocally unable to relate historical occurrences to their lives. Educators who incorporate culturally relevant pedagogical practices increase Black students' achievement in social studies-related subjects, enhance the likelihood of capturing their interest, and provide perspectives of marginalized groups. This qualitative study assesses students' experiences by conducting interviews, focus groups, classroom observations, and a content analysis review of printed documents, including student work, teacher lesson plans, and the social studies curriculum. It specifically augments prior research on the responses of Black fifth grade students to social studies instruction and offers direction for further research.

PANEL 14 - Crises in Public Health: Testing for Sickle Cell Trait in Athletes, Reducing Obesity, Treating Mental Health Disorders, and Preventing Ischemic Stroke

A Social-Ecological Examination of Sickle Cell Trait Knowledge, Perceptions & Beliefs Among Coaches, Trainers, Student-Athletes and Parents at a Florida HBCU

By Dr. Tomia Austin, *Public Health, Florida A&M University*

Sickle cell trait exertion and dehydration also known as exertional sickling is a top cause of college athlete death. As a result, the National Collegiate Athletic Association (NCCA) has mandated sickle cell trait (SCT) testing of student-athletes; however, deaths still occur, which indicates a lack of SCT awareness not addressed by screenings alone. This study thus examined SCT knowledge among student-athletes. Results indicate the population is ill informed of SCT and its adverse health effects and suggest mandated screenings for all students, not just student-athletes, supplemented with comprehensive SCT education for all beginning in high school.

A Social-Ecological Perspective of the Rural-Urban Obesity Disparity in the United States

By Brittney Dixon, *Public Health, University of Florida*

Research has demonstrated a higher prevalence of obesity in rural than in urban areas. In order to design programs/policies to address this rural-urban obesity disparity, it is necessary to understand key contributing factors. Thus, we conduct a review of the literature using the social-ecological model of health, identifying and discussing individual (e.g., diet), interpersonal/relationship (e.g., family influence on physical activity), community/physical environment (e.g., access to grocery stores), and societal/policy (e.g., access to healthcare) factors that contribute to the disparity. The review highlights key factors that affect obesity, including limited access to fresh fruits and vegetables because of distance from a grocery store; limited recreational facilities, such as sidewalks and/or nearby parks; low rates of occupational physical activity due, in part, to increased mechanization; higher rates of poverty; and limited healthcare access. We then discuss rural-based obesity interventions and existing interventions typically focused on individual and/or interpersonal/relationship factors. Future interventions may benefit from considering these factors to help participants address barriers to healthy eating and physical activity in rural areas.

Moving Towards the National School Social Work Practice Model in a Small School District: A Case Study

By Shalay Jackson, *Public Health, University of South Florida*

Adverse childhood experiences, untreated mental health disorders, and disruptive behaviors are major threats to learning and well-being in the school environment. While school social workers are ideal professionals to lead systems change to create positive learning environments and provide evidence-based prevention services to foster resilience, they remain underutilized in this capacity. Despite calls for practice reform from scholars and interest among practitioners, school social workers continue to primarily perform individual-focused tasks. This project will utilize an interactive Professional Learning Community (PLC) to bridge the gap between research and practice by enhancing the team's understanding of the evolving role of school social workers, exploring the National School Social Work Practice Model that promotes systems change and prevention, and increasing knowledge and exposure to evidence-based practices and programs. This case study seeks to determine if a PLC centered upon the National School Social Work Practice Model can increase professional knowledge and shape future practice intentions among school social workers.

PANEL 14 - Crises in Public Health: Testing for Sickle Cell Trait in Athletes, Reducing Obesity, Treating Mental Health Disorders, and Preventing Ischemic Stroke

Assessing Disparities in Health Outcomes Among Patients Diagnosed with a Stroke and a Hospital Acquired Condition in the United States, 2000-2011

By Jaleesa Moore, *Public Health, Florida A&M University*

Identifying disparities in health outcomes is critical to inform public health prevention and intervention efforts and reduce mortality related to patients with an ischemic stroke and a subsequent diagnosis of a hospital acquired condition. This study will identify disparities that exist in both health outcomes and hospital charges among the study population by analyzing the 2000-2011 Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS) database. Approximately 385,000 hospitalizations that occurred from a primary diagnosis of an ischemic stroke and a subsequent hospital acquired condition will be examined using ICD-9 codes. Statistical analyses will be performed using SAS 9.4 with significance at a 95% confidence interval and a p-value of <.05. Prevalence estimates, as well as univariate, bivariate, multivariate linear and logistic regression procedures, will be performed to identify and assess sociodemographic disparities. Findings from the study will guide public health efforts to reduce health inequities and inform policy.

PANEL 15 - Advances in Computer Science and Electrical Engineering: Self-Learning Systems and Preventing Data Breaches, Identifying Individuals from Ears, and Playing Video Games to Prevent Obesity

Anomaly Detection Through Brain Inspired Computing

By Ilia A. Bautista Adames, *Electrical Engineering, University of South Florida*

Detecting anomalies is fundamental to ensuring the reliability of web sites, servers, cloud, medical equipment, and devices connected through the Internet of Things (IoT). There are many different methods used to detect anomalies while preventing unnecessary counteractions following false alarms. Through one method, memorizing sequences, self-learning systems study patterns to help prevent data breaches and computational breakdown. One such system, Hierarchical Temporal Memory (HTM), has provided outstanding results with the ability to adapt quickly to new information. This paper proposes a simple to use and easy to understand HTM algorithm within an emerging technology architecture. The proposed minimalist system uses Spin Transfer Torque Magnetoresistive RAM (STT-MRAM) and memristors in different layers of the HTM to aid CMOS technology and saves space and energy without compromising performance. Comparisons demonstrate that this method performs as well as or better than alternative systems, while saving resources.

PANEL 15 - Advances in Computer Science and Electrical Engineering: Self-Learning Systems and Preventing Data Breaches, Identifying Individuals from Ears, and Playing Video Games to Prevent Obesity

Identification of Individuals from Ears

By Earnest Hansley, *Computer Science, University of South Florida*

A number of researchers have shown that ear recognition is a viable alternative to more common biometrics such as fingerprint, face and iris, as the ear is stable over time and non-invasive to capture. Much ear recognition research has been performed on ears captured in an ideal setting. In an ideal setting, ears are aligned as perfectly as possible, lighting is identical, subjects are not wearing earrings, and ear occlusions are controlled as much as possible. This is feasible for research. But, for practical application, ear recognition must work for ears captured in an imperfect setting or unconstrained ears. We test different ear recognition approaches and combine the results to determine if a particular pairing improves recognition. We find that a combination of features learned by artificial intelligence and features determined by humans can improve recognition of unconstrained ears.

Comparative Analysis of the Effects of Virtual Reality Active Videogame and Controller-Free Active Video Game Play on Physiological Response, Perceived Exertion, and Hedonic Experience

By Shanon Wooden, *Engineering, University of Central Florida*

Over 60% of U.S. adults are overweight or obese, and increasing physical activity (PA) levels can combat this. Interactive video games can increase PA, but no study has yet assessed physiologic effort, hedonics, and perceived exertion for playing immersive virtual reality (VR) and controller-free screen-based active video games (AVGs), compared to treadmill walking and resting. We ran sixteen subjects in 10-minute sessions of five conditions. VR-Oculus (Fruit Ninja and Boxing), AVG-Kinect (Fruit Ninja and Boxing), and Treadmill walking at 3 mph. VR Boxing elicited the greatest physiological effort, producing vigorous-intensity PA. It was also the most enjoyed activity. There was no significant difference in average heart rate for the Treadmill, Kinect Fruit Ninja, Kinect Boxing, and VR Fruit Ninja. Thus Kinect and VR games are comparable to treadmill walking PA levels and qualify as moderate-intensity activity. Both casual and sport VR and AVG activities are enjoyable activities for adults, stimulating moderate-to-vigorous activity through a traditionally sedentary medium.

Research Abstracts

PANEL 16 - Sociological Perspectives on Race and Culture

From Vulnerability to Resiliency: The Lived Experiences of Black Women Living with HIV/AIDS in South Africa

By Jessica Casimir, *Sociology, University of Florida*

Despite being disproportionately affected by HIV/AIDS, Black women have been continuously ignored in the narrative of the HIV epidemic in South Africa. Although Black women are particularly vulnerable due to the various systems of oppression they face through the intersection of race, gender, and class, no study examines the impact of the epidemic on this group. The objective of this research is to use constructivist grounded theory to examine the experiences of these women and the distinctive factors they face regarding HIV/AIDS in the South African context. The study first seeks to explore the lives of these women prior to their diagnosis as well as the events that led them to becoming aware of their status. Secondly, it looks to document their shift in portrayal from victim to survivor.

Spectacle Lynching and the NAACP's Push for Antilynch Legislation: A Reception Study of the Claude Neal Lynching

By Pablo Correa, *Mass Communications, Florida State University*

This research closely examines the lynching of Claude Neal and explains how his death influenced the NAACP's push for antilynch legislation. I argue that it was not the fact that a gruesome lynching occurred and a Black man was murdered that garnered national name recognition for Neal, but rather how his murder was interpreted and used by the NAACP in the push for federal legislation. In addition, I provide a detailed account of the Neal lynching through an analysis of primary documents as well as historical lynching trends documented in scholarship, and I place Neal's lynching within that context. Through this study, I aim to note how Black voices have been written out of the historiography of lynching, and I work to return those voices to the discourse on Claude Neal by finding historical interviews and conducting oral histories of local townspeople and Neal's surviving relatives.

Assessment of Racial and Ethnic Differences in 'Patient Satisfaction' that Impact Perceived Quality Health Care Treatment

By Oshea Johnson, *Sociology, University of Miami*

Racial and ethnic disparities in health care and health care delivery have existed since America's inception. While quality health care disparities have significantly diminished, they still persist in health care systems and interactions. This current research explores potential racial and ethnic differences in 'patient satisfaction' that impact perceived quality health care treatment. Using nationally representative data from the 2015 Medical Expenditure Panel Survey (MEPS), I measure patient satisfaction using four self-administered questionnaire (SAQ) responses provided by patients who visited a health care provider in the past twelve months; examine responses to quality health care treatment questions posed in the MEPS SAQ and answered by patients who visited a medical provider in the past twelve months; and analyze the data within the contexts of two theoretical approaches, Cultural Health Capital and Critical Race Theory. Preliminary findings reveal that minorities (Blacks, Latinos, and Other) are significantly more likely to report poorer health care quality than Whites.

PANEL 16 - Sociological Perspectives on Race and Culture

Phillis Wheatley's Collective: Clandestine Collaboration and Ekphrastic Optimism

By Cocoa Williams, *English, Florida State University*

This paper will investigate Phillis Wheatley's collaboration with painter Scipio Moorhead, a relationship read critically through the poem that bears his name, "To S.M. the Young African Painter on First Seeing His Works," and the historical record attributing the Wheatley frontispiece to Moorhead. Wheatley's ekphrastic optimism and her belief in the synesthesia of her poems with Moorhead's paintings are clearly expressed in her tribute to the young man. Utilizing Paul Gilroy's theory of the slave sublime introduced in *The Black Atlantic*, I argue that Wheatley's subversive poetics introduce a tradition of African American ekphrasis born from both slaves' initiation into modernity through the peculiar conditions of thralldom. Wheatley and Moorhead's collaboration is perhaps African American poetry's first artist collective and a testament to the enduring power of ekphrasis to make real what is absent either because the art object is a specter of the imagination or rendered specter by historical circumstance.

Disrupting Whiteness: A Critical Review of Current Literature on Race and Racism in Restaurant Labor

By Judith Williams, *Anthropology, Florida International University*

An increasing body of literature on racism within the U.S. restaurant labor force has identified significant and persistent racial segregation and inequality that mimics the enforced segregation of Jim Crow legislation. This paper will use the framework of Critical Race Theory to review current scholarship on pervasive anti-black discrimination in restaurant labor and describe how this scholarship is shaped by the normalization of White superiority. Specifically, this paper explores the socio-cultural role of Whiteness both in theory and applied practice and seeks to disrupt the underlying assumptions of White superiority that reproduce and perpetuate systemic racism in the U.S. restaurant labor force.

PANEL 17 - Policing, the Criminal Justice System, and the Causes of Recidivism Among Juveniles

Examining Police-Community Relations

By Andrea Marie Headley, *Criminology, Florida International University*

Policing is a central pillar in the criminal justice system, due to the immediate and direct contact officers have with citizens. Thus, it is often argued that police are the gateway into the criminal justice system. More recently, due to problems observed in policing practice, significant attention has refocused on the relationships between police and the communities they serve. Despite the importance of this topic, little research exists to identify the organizational correlates associated with problematic police practices, even as policy agendas aim at reforming the organizational nature of policing. This research seeks to fill that gap and empirically explores the organizational correlates of negative police-community relations. In doing so, this paper hopes to provide policy guidance at the organizational level.

PANEL 17 - Policing, the Criminal Justice System, and the Causes of Recidivism Among Juveniles

An Examination of Exposure to Violence and Reoffending Among a Sample of Juvenile Offenders

By Jordyn Rosario, *Criminology, Florida State University*

The relationships among exposure to violence, negative emotionality, and adverse behavioral outcomes are well documented. However, much of the research uses general samples where the vast majority of the sample does not offend, leaving high-risk samples who are most likely to reoffend under-sampled and underserved. This study examines the effects childhood exposure to violence has on criminal behavior and reoffending among Florida youth. Furthermore, this study examines the mediating effect negative emotionality has on exposure to violence and reoffending. In order to assess these relationships, this study analyzes a high-risk population (N = 96,247) of juvenile offenders involved in the Florida juvenile justice system from 2006 to 2016 using data from the Florida Department of Juvenile Justice. The findings demonstrate that exposure to violence has both direct and indirect (via negative emotionality) effects on subsequent reoffending. The results speak to the importance of interrupting the link between exposure to violence and reoffending.

PANEL 18 - The Dynamics of Ecological Systems and Their Impact on Plant and Animal Life

Comparison of Herbivory Intensity and Impacts on Populations of Trichocentrum Undulatum in Southern Florida and Neighboring Cuba

By Haydee Borrero, *Ecology, Florida International University*

The mule-ear orchid Trichocentrum undulatum is endemic to the Caribbean region, and southern Florida is the species distribution northern limit, with only one surviving population in the Everglades National Park. A rare, possibly endemic herbivorous fly, Melanagromyza miamensis, which can halt development of the orchid's inflorescence, has attacked the orchid at an alarmingly high rate in recent years. As a consequence, the orchid population has largely been unable to reproduce for several years. The future of the species may be at risk due to its inability, or significantly reduced capacity, to produce either flowers or fruits. In this study, we compare the nature and intensity of interactions between the herbivorous insect and the rare orchid in both southern Florida, the species' marginal distribution range, and Cuba, the core range.

PANEL 18 - The Dynamics of Ecological Systems and Their Impact on Plant and Animal Life

Population Demography of Gunnison's Prairie Dog

By Rashidah Farid, *Ecology, University of Florida*

Determining age- and gender- specific survival rates is essential for understanding population dynamics and discerning environmental influences on population parameters. Gunnison's prairie dog (Cynomys gunnisoni, GPDs) is a colonial ground-dwelling squirrel inhabiting the sagebrush ecosystem of the western United States. To discern time, age, gender and reproductive status impacts on survival, two models were implemented in Program Mark, age-cohort CJS and multistate mark–recapture model. Capture probability (p) differed between genders, with a higher (0.979± 0.012) probability for females than males (0.841± 0.040). No evidence was detected for age or time-specific variation in capture parameter. Mean age-specific survival for juveniles, yearlings, and adults was 0.461 (± SE = 0.019), 0.288± 0.022, and 0.482 ± 0.055, respectively. There was some evidence of gender difference in survival, with females having higher apparent survival than males. The sensitivity analyses indicated that the reproductive output of yearlings was the most significant driver of population growth and thus the most vulnerable vital rate to climate changes.

Mortality of Lygodium Microphyllum Following a Prescribed Fire

By Nicole Sebesta, *Biological Sciences, Florida International University*

The Australian native fern Lygodium microphyllum is invading a wide variety of habitats in southern Florida. In Everglades National Park (ENP), prescribed fire is used to maintain fire-dependent habitats and may be effective in the control of Lygodium. In January of 2017, in southern ENP, we surveyed 210 L. microphyllum plants distributed spatially and among three cover size classes (120 small plants [each occupying < 1/16 m2], 60 medium [between 1/16 and ¼ m2], and 30 large plants [> ¼ m2]). ENP prescribed a fire to the area in February. Then in March we resurveyed the plants for mortality and regrowth. Of the 210 plants in the area, 48 were unheated, 27 were heated but not consumed, and 135 appeared completely burned. All the plants will be resurveyed in June 2017 to confirm mortality and regrowth rates. High mortality due to fire would support the use of this method for controlling Lygodium in ENP.

PANEL 19 - Contemporary Problems in Public Administration with a Focus on Effective and Equitable Resource Management

Linking Process to Outcomes: Exploring How Collaborative Groups Implement Environment and Natural Resource Management

By Shanice Jones, *Public Administration, Florida State University*

Increasingly frequent hurricanes, droughts, and wildfires are posing consequences for the environment. These extreme events impact natural resources that localities, economies, and socio-ecological relationships depend upon, and public governance is shifting its approach to addressing the challenges. The prominence of a relatively new approach, collaborative governance, has raised questions surrounding the capacity of the process to achieve environmental outcomes. In an effort to link environmental outcomes to the collaborative process, this study explores how the governing approach is carried out to achieve the proposed benefits, by exploring the implementation phase. A case study of a national network of collaboratives working to conserve the nation's national resources explores the extent to which these collaborative groups utilize generated knowledge, specifically for these geographical areas, to implement conservation. This research on collaborative implementation highlights the adaptive dimensions environmental policies guiding public administration and management should consider to address the dynamic natural system.

Understanding Agricultural-Land Conservation from the Perspective of Rural Landowners in Franklin County, Massachusetts

By Rocio Lalanda, *Geosciences, University of South Florida*

What moves agricultural-land owners to use conservation easements for the protection of their land against future development? Conservation easements have become a popular strategy for land conservation in the United States. However, very few studies have examined how and why landowners agree to protect their land through conservation easements. This research seeks to address this gap in the environmental geographical literature through a study of landowners associated with the Franklin Land Trust, a nonprofit conservation organization located in western Massachusetts. More specifically, it examines the key features that shape landowners' decisions to grant conservation easements for the protection of agricultural land and the benefits and drawbacks of these legal tools as perceived by land trusts and landowners involved.

Accessibility and Opportunity for All? An Evaluation of Industry Specific Employment Change in New Transit Service Areas

By Joel Mendez, *Public Administration, Florida State University*

The decentralization of residents and employment opportunities from central cities has had adverse impacts on many inner-city neighborhoods. Policymakers have actively supported the implementation of transit projects as a way in which to mitigate such impacts, positing that such projects will connect inner-city residents to employment opportunities throughout the region and attract development back to their neighborhoods. While policymakers anticipated these positive outcomes, multiple studies have found transit to have had no significant positive impact. While transit may help stimulate economic development within new service areas, that development may not produce opportunities attainable by low-income residents. This study examines the influence of light rail investment on the employment opportunities available to low income residents within four U.S. cities and uses a difference in difference model to analyze industry specific employment change before and after the investment in those cities.

PANEL 19 - Contemporary Problems in Public Administration with a Focus on Effective and Equitable Resource Management

Archeology of Exclusion: Counter-Mapping Sites of Exclusion and Oppression in the Administrative State Using GIS

By Esteban Santis, *Public Administration, University of Central Florida*

This research examines the role critical geographical information systems (GIS) can play in helping public administration scholars and practitioners (counter-)map areas of exclusion and the resulting implications for a socially just administrative state. To do so, this paper first discusses the role of exclusion and oppression in the administrative state, by way of Agamben's (1998; 2004) state of exception, Kristeva's (1982) notions of the abject, and Quijano's (1992; 2000) coloniality of power thesis. Then the paper reviews examples of exclusion and oppression in practice. Finally, the paper presents a case study of the fatal shooting of seventeen-year-old Trayvon Martin in Sanford, Florida, on the evening of February 26, 2012. Here, counter-maps unearth a series of inequalities that, quite possibly, empowered George Zimmerman's sovereign choice to remove Trayvon Martin from a place where Trayvon's presence was the exception.

Interaction Between Income, Health Insurance, and Self-Rated Health: A Path Analysis

By Atalie Ashley West, *Public Administration, University of Central Florida*

The political focus of equitable health outcomes in the United States has long centered on access to medical care. However, evidence shows that access to medical care is only the bare minimum necessary to achieve health. Widely accepted models of health estimate that less than 20% of the variance in health can be attributed to clinical care, while greater than 50% is related to social and economic determinants. Thus, the importance of establishing appropriate upstream interventions and related policies outside of the medical encounter cannot be overstated. Public health, public affairs, and health services management literature is disjointed concerning theories and policies on the causal pathways between socioeconomic position, health insurance, and health. As such, this study seeks to examine the relationships between income, health insurance coverage, and health by exploring whether both income and medical coverage affect health and how health insurance coverage is affected by socioeconomic status.

PANEL 20 - Policies Affecting Retention, Performance and Transition of Collegiate Athletes and African American Males

Collegiate Student Athletes Moving in Transition

By Sherrina Lofton, *Education, Florida State University*

Collegiate student athletes represent a unique sub-population of students on college and university campuses in the United States, with especially unique experiences transitioning out of college and collegiate athletics. Therefore, it is necessary to explore different approaches to aid them in preparing for the transition process. This paper will examine ways in which student development process theories, specifically Nancy Schlossberg's Transition Theory (with the addition of a new second phase—Athlete Limbo) and John Holland's Person-Environment Theory, can be rethought, interlinked, and applied to collegiate student athletes. First, the paper reviews the literature surrounding athletes' transition out of sport. Second, the paper reviews and tailors Schlossberg's and Holland's theories to address the unique circumstances surrounding collegiate student athletes and their transition process. Lastly, the paper discusses implications and provides direction for future research.

PANEL 20 - Policies Affecting Retention, Performance and Transition of Collegiate Athletes and African American Males

A Case Study: Programs for Black Males at Predominantly White Institutions

By Liana Mentor, *Psychology, University of Miami*

Despite prevailing evidence that Black males under perform in comparison to their peers, programs exist that illuminate pathways predominantly white institutions (PWIs) have utilized to support success of Black men on their campuses. This paper will present preliminary results from a multiple case study that explored four programs for Black men on predominantly white campuses. The study compared specific aspects within programs to reveal components that impact Black males, which included differences between programs, how various programs have (or have not) impacted outcomes, and areas these programs have yet to address. The study provides insight about individual and contextual influences on Black males attending PWIs and how participation in these programs may have influenced their success. Findings from the study may help further direct resources to improve underrepresented minority student outcomes.

A Predictive Analysis of Historically Black Colleges & Universities' Male Athletes as Casualties of the National Collegiate Athletic Association's Academic Progress Rate

By Monique Ositelu, *Education, Florida State University*

At the beginning of the 2016-2017 academic year, the National Collegiate Athletic Association (NCAA) increased its academic standard for all Division I members (NCAA, 2016a). Since implementation of this academic reform, Historically Black College & University (HBCU) men's sport teams have systematically been penalized more often than other institutions for failing to meet the more rigorous academic standard (NCAA, 2016a). Using the NCAA publicly accessible database, this paper applies logistic regression to predict the likelihood that HBCU men's teams will ever meet the increased standard. It also discusses the implications of the NCAA enforcing the new standard for all Division I members, despite the limited resources HBCU athletic programs possess and the unique academic needs of their student athletes.

PANEL 21 - Chronic Issues in Public Health: Trauma Bonding, Genetic Testing, Quality Assurance in Primary Care Practice, and Chemotherapy as Cell Stressor

Evaluating Treatment for Trauma Bonding Among Female Victims of Intimate Partner Violence: A Single-Case Design Study

By Cherelle Carrington, *Public Health, Florida International University*

Many victims find it difficult to separate from an abusive partner and are therefore prone to a high rate of reunion and subsequent renewed violence. One theory attributes this behavior to the phenomenon of traumatic bonding, a paradoxical development of reciprocal positive feelings between victims and their abusers. The purpose of the proposed study is to assess the efficacy of Traumatic Incident Reduction (TIR) and Trauma Bonding Protocol (TBP) in (1) decreasing traumatic bonding; (2) increasing the victim's propensity for change; (3) decreasing the victim's anxiety and depression; and (4) increasing the victim's safety-seeking behaviors. A single-case design will be employed to evaluate the effects of TIR and TBP. A convenience sample of 20 participants will be selected from women seeking treatment at a Trauma Center in Miami. The results of the proposed study will provide information on whether TIR and TBP have beneficial impact on a victim's attachment to her abuser, propensity for change, affective states, and safety-seeking behaviors.

Utilization of Genetic Testing for Lynch Syndrome-Related Colorectal Cancer: Pilot Study Findings

By Vanessa Crowther, *Public Health, Florida A&M University*

This study assesses whether primary care physicians' (PCPs) perceptions of genetic testing for Lynch syndrome-related colorectal cancer (LS-CRC) influence their likelihood of adopting this innovation into primary care. Lynch syndrome (LS) is an inherited condition that increases individuals' lifetime risk of developing colorectal cancer (CRC) by up to 80%, compared to the general population (2%). Early intervention can reduce morbidity and mortality of patients and their relatives by 60%. Guidelines recommend testing all patients newly diagnosed with CRC for Lynch syndrome, regardless of age or family history; however, testing rates are low. This pilot study employed a quantitative research design using a survey developed from existing sources. A convenience sample of 53 Florida licensed PCPs specializing in Family Medicine, Internal Medicine and Obstetrics/Gynecology completed the survey. While conclusions cannot be drawn from this small sample size, this study contributes to knowledge of factors that predict the ordering of genetic counseling and testing by PCPs for patients newly diagnosed with CRC.

PANEL 21 - Chronic Issues in Public Health: Trauma Bonding, Genetic Testing, Quality Assurance in Primary Care Practice, and Chemotherapy as Cell Stressor

Multi-Year Performance Trends Analysis of Primary Care Practices Demonstrating Patient-Centered Medical Home (PCMH) Transformation

By Vincent Pereira, *Public Health, University of Central Florida*

Adoption of the Patient-Centered Medical Home (PCMH) delivery model is growing as medical practices pursue pay-for-performance delivery models. PCMH delivery is associated with lower-costs and utilization rates. To analyze performance trends across core PCMH activities and identify challenges, a retrospective observational study was conducted using data from the National Committee for Quality Assurance (NCQA) Recognition Program examining the first (2008) to the most current (2017) PCMH evaluation metrics for over 20,000 primary care practices across the United States. Results show that the rate of PCMH recognition at all levels has grown significantly. In 2008, eighty-nine practices achieved the highest recognition level for PCMH. Currently 6,500 have attained that level, although fewer than half satisfy all requirements for four of the six Must Pass Elements for PCMH 2014. Additionally, significant differences were found across practices by area (urban v. rural) and practice size. The study concludes that support to overcome barriers to PCMH recognition should be focused on small and rural practices.

Targeting Human DNAJAs that Display an Increased Response to Chemotherapeutic Agents

By Aurellia Whitmore, *Pharmaceutical Science, Florida A&M University*

Cytotoxic chemotherapy drugs such as doxorubicin are used to treat over sixty cancers and malignancies, however serious side effects result from high doses needed to overcome cell resistance. Despite nearly fifty years of therapeutic administration and research, resistance mechanisms and ways to overcome them have not been identified. We have identified Heat Shock Proteins (HSPs) as potential targets for increasing susceptibility to doxorubicin, as HSPs are known to protect human cells from stressors including chemotherapy. To determine their role in cellular response to chemotherapeutic stress, we used a yeast model system, S. cerevisiae, to investigate their survival during exposure to cytotoxic agents. Our results indicate that two of the four human HSPs expression provide distinct levels of protection, indicating that HSPs play a role in protecting cells from cytotoxic stress. Thus, they could serve as targets to hypersensitize cells to cancer therapy, allowing for lower doses of treatment with a concomitant reduction of side effects.

PANEL 22 - Cutting Edge Research in Psychology: The Impact of Self Control, Rumination, and Social Support on Behavior

Understanding Physical Activity Behavior Among Black Female College Students: An Exploration of the Theory of Planned Behavior and PEN-3 Model

By Allyson Diggins, *Psychology, University of Florida*

Although rates of inactivity for Black women are problematic across the lifespan, they begin to increase during young adulthood. In addition, inadequate attention to the potential influence of culture on physical activity among Black women may contribute to the mixed success of current interventions. Further, lack of theoretical models that adequately account for the complexity of culture in relation to physical activity limit the understanding of the mechanisms influencing it. Therefore, the current study will examine the influence of culture on physical activity attitudes and behaviors among Black female college students using the Theory of Planned Behavior (TBP) and PEN-3 model grounded in an ecological approach. The objectives of the study are to examine the relationships among TPB and PEN-3 factors on physical activity engagement among Black female college students.

The Relationship Between Executive Functions and Rumination on Internalizing and Externalizing Symptoms in Children

By Sherelle Harmon, *Psychology, Florida State University*

Rumination is associated with risk for psychopathology. Executive dysfunction has been implicated in rumination and psychopathology risk, separately. However, few studies have examined the relation between executive dysfunction and rumination and their shared risk for psychopathology in children. The current study examined these relationships. Forty-one children (56% male), ages 8 through 13 years, completed a battery of neurocognitive tasks assessing working memory, inhibitory control, set shifting, and measures of rumination, depression, and aggression. Mediation regression models examining the direct and indirect relationships between each variable were conducted. Poorer working memory, and not inhibitory control or set shifting, significantly predicted higher depression and aggression. Executive functioning was unrelated to rumination. Higher rumination significantly predicted elevated depression and aggression. Rumination did not mediate the relationship between executive function and psychopathology. Results suggest that executive functioning and rumination are unrelated and that both mechanisms are important targets for assessing psychopathological risk in children.

PANEL 22 - Cutting Edge Research in Psychology: The Impact of Self Control, Rumination, and Social Support on Behavior

When We Talk About Black Culture, What Do We Mean? And How is it Related to Achievement?

By Rasheda Haughbrook, *Psychology, Florida State University*

According to the U.S. Department of Education, Black students comprise approximately 15.5% of students in grades K through 12. However, despite accounting for a minority, Black students are overrepresented in special education programs, disproportionately impacted by school discipline practices, and often left behind academically. In addition, there has been a stable and persistent achievement gap between Black and White students for over 50 years, showing Black students lagging their White counterparts (Hanushek, 2016). Different factors contribute to the misfortunes experienced by Black students within the education system, including cultural misunderstandings (Bowman, 1994). As education in the United States is normed on European standards, cultural practices of non-white students are often ignored, even though studies show incorporating culturally relevant practices in classrooms leads to positive achievement and behavioral outcomes for minority students (Villegas & Lucas, 2002). Thus, understanding Black culture may lead to better teaching practices and policies meeting the needs of these students. The current study focuses on understanding how to measure Black culture and how it can relate to student achievement.

The Impact of Parental Divorce on Children's Confidence Levels

By Lawrence Jackson, *Humanities, Florida State University*

Parental divorce is a life transition that affects a substantial number of children each year. The purpose of this study is to investigate the relationship between social support and confidence levels (defined as career expectations and confidence in romantic relationships) for those impacted by parental divorce. A MANOVA and a Pearson 2-tailed correlation was performed to examine the relationships. Three hundred and twelve young adults participated in the study. The results indicate that the quality of social support had a significantly positive relationship with career expectations and romantic relationship confidence. The findings suggest quality relationships are more significant than quantity or amount of social support given by parents, family members, or friends.

Self-Control as the Moral Muscle: Self-Control Predicts Both Deontological and Utilitarian Moral Dilemma Decisions

By Heather Maranges, *Psychology, Florida State University*

Self-control allows people to inhibit selfish impulses to behave prosocially, yet it remains unclear how self-control influences moral decision-making. Given that both rejecting harm (deontological) and accepting outcome-maximizing harm (utilitarian) decisions involve prosocial considerations, self-control may positively predict both response tendencies in moral dilemmas. We tested these predictions in four studies using process dissociation and in an internal meta-analysis (N = 1402). In Study 1, trait self-control predicted deontological, but not utilitarian responses, but in Study 2 it predicted both. In Study 3, a behavioral measure of self-control, persistence on the cold pressor task, predicted deontological but not utilitarian response tendencies. Study 4 demonstrated that multiple moral thinking styles mediated the effect of self-control on the utilitarian parameter, which largely counteracted one another. Together, results suggest those with high self-control both avoid harm and maximize outcomes when faced with moral dilemmas.

PANEL 23 - Significant Discoveries in Electrical Engineering

Photoluminescence Study of p-type Doping in CdTe Thin Films

By Shamara Collins, *Electrical Engineering, University of South Florida*

Due to high efficiency and reduced absorber layer thickness, cadmium telluride (CdTe) thin films are an attractive alternative to current solar cells. Doping, the addition of impurities like phosphorus (P), contributes to solar cell performance by increasing carrier concentration and changing energetic levels that allow carriers to recombine. However, it is not clear how doping incorporates into polycrystalline CdTe thin films. We used low-temperature photoluminescence (PL) to probe the change in energetic levels through the capture of radiative recombination. Films were deposited by the elemental vapor transport (EVT) technique, under varying Cd/Te vapor ratios and two P concentrations. PL measurements revealed emission bands at: 1.57, 1.54-1.50, 1.46-1.36, 1.28, 1.0 and 0.7 eV. The 1.547 eV band involved phosphorus related defects (PTe). The most intense band (1.51 eV) occurred with the highest dopant concentration, suggesting that a screening mechanism reduced incorporation of dopant on preferred CdTe lattice sites. These findings provide a better understanding of the dopant control required to improve the fabrication of CdTe solar cells.

Metallization of Liquid Crystal Elastomer Helical Antenna Used for Potential Radio-Frequency Identification

By John Gibson, *Electrical Engineering, Florida International University*

In this paper, we investigate the different methods of metalizing the Liquid Crystal Elastomer. In an Radio-Frequency Identification (RFID) system based on temperature, there are threshold violations which will shift the optimal operating frequency. The change in frequency due to the temperature of the proposed antenna is shown here. We want to investigate whether the reconfigurable antenna has the potential for passive RFID temperature based sensing capabilities.

Reflectance Studies on the ZnO/SiNWs P-N Junction Prepared from Si Nanowires Grown by Electroless Etching

By Dr. Victor Velez, *Electrical Engineering, University of Central Florida*

Zinc Oxide (ZnO) is a well-known prospective candidate for impurity doping, especially when doped with group III elements due to improvements in properties of the films. The promising properties of ZnO, such as good thermal stability, lower resistivity, nontoxicity, wide band gap (about 3.3 eV), and high conductivity, make it an attractive candidate for many applications. In particular, thin films of silicon doped ZnO have shown great promise for developing applications including transparent conductive oxide (TCO) properties with significant drops in resistivity values. Furthermore, the low processing cost, natural abundance and larger exciton binding energy of ZnO (60 meV) make it suitable for use in luminescent and photovoltaic applications. In this study, we propose a new model of cost effective and high efficiency p-n junction based on Si nanowires (SiNWs) and ZnO with potential applications in solar energy. The ZnO grown on SiNWs may work as an active n-layer as well as antireflection coating.