

Posters

Abstract #: **P 1**

Presenter: Laurie Dempsey

Research Mentor: Marc Karver, Ph.D.

Title: Predictors of Self-perceived Burden among Individuals Living with a Chronic Illness

Many individuals with a chronic illness are unable to fulfill previously-held roles, leaving others to assume responsibility. Individuals are unlikely to be able to reciprocate the care and support given by caregivers to the degree they feel is warranted, which fuels feelings of perceived burden. Perceived burden is not only distressing in itself, but is also related to depression, desire for death, and suicidal ideation. Despite recent interest in self-perceived burden, little is known about why some people with a chronic illness perceive themselves to be a burden while others do not. The current study explored predictors of self-perceived burden, such as empathy and impairment. Participants were 110 individuals from the USF Parkinson's Disease and Movement Disorders Center. Self-report measures assessed perceived burden, psychological distress, functional impairment, empathy, suicidal ideation, and desire for death. The relationships between perceived burden, psychological distress, and functional impairment will be discussed, including the relationship between empathy and perceived burden. This research provides insight into the mechanisms of self-perceived burden so at-risk individuals can be more easily identified. Investigating this construct will aid clinicians in helping individuals cope with lifestyle changes due to their illness to avoid feeling like a burden on others.

Abstract #: **P 2**

Presenter: Frank Fishburn

Research Mentor: Dr. Toru Shimizu

Title: Male pigeons discriminate real-time and pre-recorded self-videos

Research has identified numerous cognitive abilities in birds once thought to be unique to primates. These abilities include tool use, episodic memory, vocal communication, and behavior prediction. The existence of these abilities, combined with the relatively early evolutionary divergence of bird and mammalian lineages, raises many questions about the nature and origins of the neural substrates involved in these cognitive processes. Here we investigate the presence of self-recognition-like ability in the pigeon. Male pigeons attempt to engage in courtship-like behavior with unfamiliar individuals regardless of sex. Accordingly, we studied whether males react differentially to real-time views of the self compared to pre-recorded views of the self. Subjects reacted strongly to pre-recorded video images of the self and those of unfamiliar males. Their responses were weaker to the real-time views of the self, including mirrored and horizontally or vertically flipped images. The results demonstrated that they discriminated between the real-time and pre-recorded stimuli, suggesting that the discrimination was based on congruence with real-time proprioceptive or efferent signals. This finding facilitates further study of the neural mechanisms potentially responsible for this ability.

Abstract #: **P 3**

Presenter: Savannah Frazier

Research Mentor: J. Kevin Thompson, Ph.D

Title: Body dissatisfaction and objectified body consciousness among tattooed and non-tattooed college women: An exploratory study

Savannah Frazier, J. Kevin Thompson, Ph.D, Jessie Menzel, B.A., University of South Florida

High levels of body dissatisfaction and objectified body consciousness may explain a number of clinical problems that occur predominantly in women. Both may contribute to such psychological problems as eating disorders, diminished self-esteem, mood disorders and sexual dysfunction. Many women consciously step out of the "objectification limelight" by making an effort to work against the traditional appearance norms that may work to create higher levels of body dissatisfaction. Tattooing may be one way to resist objectification. Tattooing has been found to be associated with psychological distress. However, ownership of a tattoo(s) may also have some positive implications. The purpose of the current study is to explore the differences between tattooed and non-tattooed college women on measures of body dissatisfaction and objectified body consciousness. Measures looking at body dissatisfaction, objectified body consciousness, tattoo attitudes and negative/positive affect will be distributed to 300 undergraduate college women. Young college women are a group especially at risk for body dissatisfaction and objectified body consciousness. The identification of possible associations between tattoos and other forms of psychological disturbance is warranted. By determining possible risk factors we may better be able to target at risk populations for interventions related to body dissatisfaction.

Abstract #: **P 4**

Presenter: Natasha Garcia

Research Mentor: David Drobles, Ph. D.

Title: Effects of yoga and cardiovascular exercise on cue reactivity while attempting smoking cessation

Exercise has produced short term reductions of craving and withdrawal symptoms in smokers. A few studies have evaluated exercise as part of a smoking cessation treatment but findings show mixed results. A better understanding of the effects of exercise on smoking-related motivation may lead to improved incorporation of exercise into cessation programs. This study aims to explore the effects of two forms of exercise, in addition to cessation counseling, on self-report craving and the startle eye blink reflex to smoking cues during the smoking cessation process. These types of cue reactions have been suggested to be predictors of smoking relapse. To date, 20 cessation seeking smokers average age 40.4 years that smoke an average of 21.25 cigarettes a day have been evaluated. Participants were randomized to one of three groups: cardiovascular exercise, hatha yoga, or a non-exercise control group. Approximately once a week, for three weeks, participants engaged in 30 minutes of exercise in our lab, or watched control fitness videos. Before the initial exercise session and after the final exercise session, participants were exposed to smoking and neutral cues. Startle eye blink reflex, along with self report craving, were recorded during these cue trails.

Abstract #: **P 5**

Presenter: Tegan Lesperance

Research Mentor: Dr. Kathleen Moore

Title: Examining the Relationship between Trauma and Risky Sexual Behavior in a Substance-involved Sample

This study examines individuals involved in a Family Dependency Treatment Court program (FDTC) who received treatment at Goodwill-Suncoast Industries Inc. FDTC provides treatment to parents who are substance involved and have had their children removed from the home.

A pilot study revealed a high prevalence of trauma among female FDTC participants. The link between trauma and substance abuse is well documented. Traumatic events have been linked to an increased risk of substance abuse and risky sexual behavior in both women and men. Some research also suggests a potential relationship between substance use and risky sexual behavior, but here the research is less conclusive. Evidence for an inverse relationship between drug use and condom use, however, is strong.

Given the potential interactions between trauma, substance abuse and risky sexual behavior, it is prudent to investigate these relationships within the FDTC population. This study looked at participants 12-months after beginning treatment. There were two hypotheses: (1) Participants with a higher prevalence of trauma will have more experience with risky sexual behaviors, (2) qualitative data will reveal many risky sexual activities including unprotected sex and sex while intoxicated.

Abstract #: **P 6**

Presenter: Lindsey Moreno

Research Mentor: Dr. Justine VanDyke

Title: Semantic and Syntactic Integration during Sentence Comprehension in School-age Children and Young Adults

This study is designed to test the different ways in which semantic and syntactic information is mentally accessed and combined during reading comprehension in adults and two groups of children using an integrated neuroscience approach. Previous research with adults has shown that the ability to coordinate semantic and syntactic information rapidly is critical to oral and reading comprehension; however, these processes are still poorly understood in children. We will collect behavioral and neurophysiological (event-related potentials) pilot data from approximately 20 participants to test whether adults and younger children engage in similar or different comprehension processes when they are reading. One theory of child language acquisition, the continuity hypothesis (Clahsen & Felser, 2006), suggests that adults and children engage in similar comprehension processes; an opposing theory, the competition model (MacWhinney & Bates, 1989), suggests that adults and children engage in different comprehension processes. Event-related potentials are a useful tool in answering this question because of their temporal precision and because they have been shown to differentiate between semantic and syntactic processing. Data analysis will focus on the relative amplitudes of two ERP components, the N400 and the P600, which have been shown to be robust indicators of semantic and syntactic processing, respectively.

Abstract #: **P 7**

Presenters: Sarah Norris, Nicole Rubin, & Rachel Manno

Research Mentor: Jerri Edwards, Ph.D.

Title: Cognitive Reasoning Ability in Persons with Parkinson's Disease

USF School of Aging Studies

Introduction. Parkinson's disease (PD) is commonly associated with physical manifestations, but cognitive deficiencies are also experienced (Raskin et al., 1990). Cognitive problems in PD are better indicators of future treatment required (Bronnick et al., 2006; Aarsland et al., 2005). The purpose of the present study is to compare cognitive reasoning for instrumental activities of daily living among persons with and without PD. **Methods.** The study included 29 community-dwelling adult participants with a mean age of 70 years, 19 of whom had PD. The Everyday Cognition Battery (ECB) was used to measure cognitive reasoning for everyday tasks such as medication use and financial management. **Results.** MANOVA showed that the participants with and without PD did not differ in education, age, vision, mental status, or depressive symptoms, Wilks' $\Lambda=0.779$, $F_{(5,23)}=1.30$, $p=0.297$. A T-test was used to compare ECB performance of the two groups. The results showed that there was a significant difference, $t_{(26)}=2.65$, $p=0.013$. The PD group scored lower suggesting greater difficulty with everyday reasoning tasks. **Conclusions.** These results have real world implications. Individuals with PD may be more likely to experience difficulties in daily functional activities. Even more serious implications lie in the capacity to make treatment choices (Griffith et al., 2005).

Abstract #: **P 8**

Presenter: Kelsey Persons

Research Mentor: Dr. Richard Reich

Title: THE RELATIONSHIP AMONG CHILDREN'S ALCOHOL EXPECTANCIES, ACADEMIC ACHIEVEMENT, AND SOCIOECONOMIC STATUS

K. Persons; N. Bekman; R. Reich; M. Goldman. University of South Florida, Alcohol and Substance Use Research Institute, Tampa, FL 33620.

Individuals exposed to alcohol develop expectancies—their knowledge about consumption and its consequences. Previous research demonstrates that expectancies become increasingly positive throughout the school-aged years. Positive perceptions and beliefs can be a risk for future alcohol abuse or dependence. The current study seeks to identify risk for alcohol use by assessing academic achievement (Florida Comprehensive Assessment Test; FCAT) and socioeconomic status (Free/Reduced Lunch Program) as predictive factors of alcohol expectancy. Children (N = 299; 60% female) ages 7 through 12 were assessed on alcohol expectancies measured by endorsements on the Memory Model Based Expectancy Questionnaire. The number of expectancies endorsed positively correlated with FCAT scores ($r = .30$, $p < .01$). Unexpectedly, positive/social expectancies were positively correlated with FCAT scores ($r = .31$, $p < .01$). As qualification for Free/Reduced Lunch increased, FCAT scores decreased ($r = -.27$, $p < .01$). Children with higher FCAT scores seemingly have more complex understandings of alcohol, particularly with positive expectancies. Validating previous work, the inverse relationship between FCAT scores and Free/Reduced Lunch qualification supports a social discrepancy on children's FCAT performance. Future research should determine if the FCAT—expectancy relationship reflects an increased knowledge of many topics (including alcohol), or if there is something unique about alcohol information.

Abstract #: **P 9**

Presenter: Erica Interval

Research Mentor: Dr. Richard Reich

Title: EVENT RELATED DRINKING IN ADULTS: A SPECIAL EMPHASIS ON PROM, WEDDINGS, AND BIRTHS

E. Interval, A. Jedrzejewski, K. Persons, R. Reich, M. Goldman. University of South Florida, Alcohol and Substance Use Research Institute, Tampa, FL, 33620.

Objective: Previous research in the area of adult alcohol use has predominantly focused on negative life events and drinking. The current study examined the relationship between alcohol use and a variety of life events: prom, weddings, and births. Method: This longitudinal 4-year study involved adults (N = 600; 50% female; 50% college students) recruited between 18-19 years of age. Data was collected using the Time Line Follow Back Form 90 and assessed drinking habits every quarter for the duration of the study. Information was gathered on alcohol consumption and events for each calendar day of the 4-year longitudinal period. Results: For prom and weddings, alcohol use increased considerably during the event week compared to the 8 weeks prior to and 8 weeks following the event. For weddings, participant drinking was contingent upon his/her relationship to the newlyweds. For participants who experienced pregnancy during the study, their drinking rates dropped in comparison to their peers and resumed in an upward trend after childbirth. Conclusion: The results of this study show a relationship between life events and changes in drinking patterns. Its social implications create groundwork for a young adult educational model to promote responsible drinking behavior throughout all of life's events.

Abstract #: **P 10**

Presenter: Collin J. Rahal

Research Mentor: Judith B. Bryant, Ph.D.

Title: Compensatory Eating and Behaviors in Response to Alcohol Consumption: Proposal for a New Measurement

Collin J. Rahal, Judith B. Bryant, Ph.D., Jack Darkes, Ph.D., University of South Florida

“Drunkorexia” is a non-medical term coined by the media over the past year. It describes a disturbing blend of diet-related behaviors, such as self-imposed food restriction, excessive exercise, or bingeing and purging associated with the consumption of alcohol. The motives for engaging in these behaviors appear to vary depending on the individual. However, the general motivation is to compensate for the calories that are contained in alcohol. Although researchers have clearly established the co-occurrence of eating and alcohol use disorders, there has only been one exploratory study that has investigated the specific interrelationships among these behaviors. The purpose of the present study is to design a scale that validly and reliably measures dysfunctional eating and other behaviors in direct response to the calories ingested from drinking alcohol. Additionally, the proposed measure will explore different patterns of behaviors, frequency and severity of behaviors, and combinations of these behaviors. Data are currently being collected by means of an online questionnaire for a desired sample of 200 undergraduates. This measure may eventually be utilized as a screening tool for identifying dysfunctional eating and drinking.

Abstract #: **P 11**

Presenter: Kenneth Stahl

Research Mentor: Dr. Jack Darkes

Title: Marijuana and Personality: The Mediation Role of Expectancies

Although research has shown that both individual characteristics and alcohol expectancies influence ongoing drinking the same relationship remains largely unexamined in marijuana use. Sensation Seeking has exhibited the ability to predict substance use, but a broader range of personality facets may also predict patterns of use. The Big Five personality dimensions share facets (e.g., Extraversion) with Sensation Seeking as a risk factor for substance use, but the Big Five may also reflect protective factors (e.g., Conscientiousness). This study assesses the impact of both personality and expectancies on marijuana use. Three-hundred psychology students will complete online questionnaires assessing the Big Five personality dimensions, sensation-seeking, and marijuana expectancies and use. Increased Openness to Experience and Extroversion will be associated with more positive expectancies and increased marijuana use; higher levels Conscientiousness and Agreeableness will be correlated with more negative expectancies and decreased use. The NEO-Five Factor Inventory will predict substance use more strongly than the Sensation Seeking Scale. The identification, in this study, of specific personality traits and expectancies that predict risk or protection could facilitate more effective targeting of drug prevention programming.

Abstract #: **P 12**

Presenter: Becky Stell

Research Mentor: Cynthia R. Cimino, PhD.

Title: The Effect of Depressive Symptoms on Cognitive Abilities in Parkinson's Disease

Becky Stell & Cynthia Cimino, Ph.D., University of South Florida

Cognition and depression are two of the most common yet under investigated symptoms in Parkinson's disease (PD). Research suggests that depressive symptoms can increase the rate of cognitive decline in PD patients. A commonly used assessment measure for global cognitive decline is the Mini Mental State Exam (MMSE). The MMSE measures global cognitive functioning but does not hone in on the specific deficits that PD patients typically face. This study uses a revised version called the MMSE-II that focuses on cognitive changes typically observed in PD. The purpose of this study is twofold: 1) to compare the MMSE to the MMSE-II in identifying cognitive deficits in PD and 2) to compare performance of PD patients with high and low depressive symptoms on the MMSE-II. It is hypothesized that the MMSE-II will serve as a better screening measure of mild cognitive changes in PD patients than the MMSE. It is also hypothesized that PD patients with high depressive symptoms will perform worse than those with low depressive symptoms on the MMSE-II. Significant findings will help validate a new measure that focuses on the deficits to PD patients.

Abstract #: **P 13**

Presenter: Violetta M. Yevstigneyeva

Research Mentor: Cheryl L. Kirstein, Ph.D.

Title: Social interaction with an alcohol-intoxicated peer mediates greater alcohol consumption in adolescent female, but not male, rats

Violetta M. Yevstigneyeva, Antoniette M. Maldonado, M.A., Mary K. Hennessey, B.A. & Cheryl L. Kirstein, Ph.D., Cognitive and Neurosciences. Department of Psychology, University of South Florida, Tampa, USA.

The present experiment investigated the effects of social behaviors on subsequent ethanol (EtOH) intake in adolescent male and female rats. The demonstrator-observer paradigm is an animal model used to assess effects of social interaction on EtOH-related behaviors in adolescent rats. Demonstrators were administered water or 1.5 g/kg/ig EtOH and allowed to socially interact with observers. Observers were subsequently allowed voluntary access to EtOH overnight. Both adolescent male and female observers that socially interacted with an alcohol-intoxicated peer engaged in lower social play during the social interaction session. However, adolescent female observers that interacted with an intoxicated peer showed greater social contact and investigation, while males showed no change in these behaviors following the interaction. Subsequently, adolescent female observers that interacted with an alcohol-intoxicated peer showed greater EtOH intake and preference for EtOH. No change in EtOH intake or preference for EtOH was observed between adolescent male observers. These results indicate sex-related differences in the influence of specific social behaviors with an alcohol-intoxicated peer. Females show a change in alcohol consumption following social interaction with an alcohol-intoxicated peer and exhibit greater overall intake as compared to males, which may put females at greater vulnerability for long-term consequences of early EtOH exposure.

Abstract #: **P 14**

Presenter: Susan Yi

Research Mentor: Gwendolyn Quinn Ph.D

Title: A Review on Male Breast Cancer and Risk Factors

Susan Yi – USF CAS, Department of Chemistry; Susan T. Vadaparampil Ph.D. – USF COM, Department of Oncologic Sciences and Moffitt Cancer Center, Health Outcomes and Behavior Program; Cheryl A. Miree M.S. – Moffitt Cancer Center, Health Outcomes and Behavior Program; Gwendolyn Quinn Ph.D. – USF COM, Department of Oncologic Sciences and Moffitt Cancer Center, Health Outcomes and Behavior Program

Keywords: Male Breast Cancer, hereditary mutations, BRCA2, Klinefelter's Syndrome, occupational and environmental risks

The objective of this research is to summarize the literature on male breast cancer (MBC) and the risk factors associated with it. Key search terms were used to identify related articles pertaining to male breast cancer in PubMed and Google Scholar (ie. Klinefelter's Syndrome, male breast cancer and BRCA). The inclusion criteria was for the article to be: an empirical study published in English, between 1960-2008, and in a peer-reviewed journal. The search identified 35 articles meeting the inclusion criteria. The majority of studies found a high risk for MBC associated with hereditary genetic mutations, especially the BRCA2 mutation. Links between male breast cancer and some diseases associated with high elevation of estrogen, such as Klinefelter's syndrome were also identified. Additional research indicated occupations related to high temperature environments are also a risk factor. This is an important area of health research due to the increasing incidence and mortality rate. The few studies that exist are often limited by small sample sizes and little is known about the etiology and prevention efforts. Future research should focus on the biological and behavioral aspects of hereditary links so men and their families can be educated about possible preventive measures for male breast cancer.

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Abstract #: **P 15**

Presenter: Laura Anderson

Research Mentor: Dr. Chad Dickey

Title: The Effect of Heat Shock Protein 27 on Phosphorylated Tau

Laura Anderson, Umesh Jinwal, John Koren III, Jeffrey Jones, Amelia Johnson, Cody Shults, and Chad Dickey, Department of Molecular Medicine, University of South Florida, Tampa, FL

Tau, a factor in neurodegenerative diseases, is a protein that is involved with the assembly and stability of microtubules. Tau is phosphorylated by many kinases, which can cause it to be released from the microtubules. In an AD mouse model, tau becomes hyperphosphorylated and forms abnormal tangles causing cell death. Hsp27 is an ATP independent protein that has been shown to be associated with tangles and reduce the amount of hyperphosphorylated tau. There is evidence to suggest AKT, a major cellular kinase, is involved in regulating this pathway.

To explore the relationship between Hsp27 and phospho-tau, adeno-associated viral particles expressing Hsp27 were directly injected into the hippocampi of Tg4510 mice. We performed immunohistochemical stains for tau and Hsp27 on the harvested tissue. To better understand the mechanism for this phenomenon, we explored the impact of Hsp27 phosphorylation state, which alters its ability to form oligomers and bind substrate.

We find that there is a correlation between tau reductions and Hsp27 over expression. Oligomeric and monomeric forms of Hsp27 showed significant differences in their efficacy for clearance of phospho-tau. We have also demonstrated that Hsp27 is ubiquitinated by CHIP and this process is controlled by Akt.

Abstract #: **P 16**

Presenter: Vignesh Alamanda

Research Mentor: Dr. Srikumar Chellappan

Title: Regulation of Cell Cycle Regulatory Genes by Rb-Raf-1 Disruptors in Melanoma Cells

A Rb-Raf-1 disruptor, RRD-251, prevents the direct phosphorylation of Rb by Raf-1. This enables E2F-1 to remain bound to the active Rb and results in transcriptional downregulation of cell cycle regulatory genes. It is shown that as the concentration of RRD-251 is increased, the level of the transcription factor E2F-1 decreases. The mRNA expression levels of two E2F-1 regulated genes, CDC-6 and TS, also showed a decrease as the concentration of RRD-251 was increased. Survivin, a gene known to play a crucial role in the inhibition of apoptosis, was also found to decrease with increasing concentrations of RRD-251. Additionally, RRD-251 induced caspase dependant apoptosis in melanoma cells. In the presence of RRD-251(50uM), the treated cells underwent programmed cell death as evidenced by the cleavage of pro-apoptotic proteins, Caspase-3 and PARP. Cells treated with Z-VAD, a pan caspase inhibitor, prior to RRD-251 treatment showed no cleavage of PARP and Caspase-3.

Abstract #: **P 17**

Presenter: Brittany Hasty

Research Mentor: Dr. Nagwa Dajani

Title: Pre-term Colostrum Inhibits Lymphocyte Proliferation and Promotes Production of Stem Cell Growth Factors

Nagwa El-Badri (Dajani), Terri Ashmeade, Brittany Hasty, Amal Hakki, Maureen Groer

Preterm colostrum differs from full term colostrum in the composition of nutrients, anti-inflammatory and immune regulatory factors. Since premature infants suffer from a higher susceptibility to infections and diseases such as necrotizing enterocolitis (NEC), we investigated the hypothesis that preterm colostrum contains immune modulating factors that suppress immune reactivity and promote healing in response to GI inflammation. Participant mothers delivered preterm (n=14) or term infants (n=49) at TGH. Colostrum samples were collected on day 2 after delivery, fat and cells removed, and then frozen. Healthy donor PBMCs were ficolled from herparinized blood samples. Varying amounts of thawed, filtered colostrum were added to control wells, cells and wells with PHA, pulsed with tritiated thymidine, and lymphocyte proliferation measured by the Stimulation index. Cytokine concentrations from the same samples were measured using Millipore 26-plex kits analyzed on Luminex. The cytokine balance varied significantly. GM-CSF was nearly twice as high in preterm milk (471 compared to 261 pg/ml). A similar significant increase in preterm cytokines IL-3 and IL-6 was observed. Suppression of immune cell proliferation was associated with highly [\[BHI\]](#) significant increase in GM-CSF, IL-3 and IL-6 but not G-CSF in preterm compared to full term colostrum. Furthermore, the data indicates that preterm colostrum may play a role in healing neonatal infections by reducing lymphocyte proliferation while simultaneously stimulating tissue regeneration.

Abstract #: **P 18**

Presenter: Jeffrey Jones

Research Mentor: Dr. Chad Dickey

Title: Aging Analysis Reveals Slowed Tau Turnover and an Enhanced Stress Response in a Mouse Model of Tauopathy

Jeffrey R. Jones, Chad Dickey, Clara Kraft, Umesh Jinwal, John Koren, Amelia Johnson, Laura Anderson, Lori Lebson, Daniel Lee, Dennis Dickson, Rohan de Silva, Lester I. Binder, David Morgan and Jada Lewis
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We have extensively analyzed the biochemical and histochemical tau profile from the rTg4510 transgenic mouse model, which uniquely develops forebrain tau pathology similar to that found in human tauopathies. Levels of several soluble phosphorylated tau species were highest at 1 month (M) relative to later time points, suggesting that certain tau hyperphosphorylation events were insufficient to drive tangle formation in young mice. Despite robust pre-tangle-like accumulation of phospho-tau in 1M mice, this material was cleared by 3M, indicating that the young mouse brain either fails to facilitate tau insolubility or possesses an enhanced ability to clear tau relative to the adult. We demonstrate that specific tau fragments biochemically correlate to the onset and severity of tau pathology. Additionally, we found that while heat shock protein expression increased with normal aging, this was accelerated in rTg4510 mice. Moreover, by exploiting an exon 10 (-) specific antibody, we demonstrated that endogenous mouse tau turnover was slowed in response to human tau over-expression, and this endogenous tau adopted disease-related properties. These data suggest that young mice fail to develop lasting pathology despite elevated phosphorylated tau, and that active production of small amounts of abnormal tau could facilitate dysfunction and accumulation of normal tau.

Abstract #: **P 19**

Presenter: Siddharth Joshi

Research Mentor: Dr. Ronald F. Mervis

Title: Dendritic Alterations in the Frontal and Parietal Cortices in Mild Cognitive Impairment and Alzheimer's disease.

Ronald F. Mervis^{1,2,3}, James Kotick^{3,4}, Mrunal Shah^{3,4}, Adam Winkler⁵, Konstance Kasimos⁴, Siddharth Joshi⁴, Stephen Scheff⁶, Elliott J. Mufson⁷, ¹Center of Excellence for Aging & Brain Repair, Univ South Florida College of Medicine, Tampa, FL, ²Dept of Neurosurgery, USF, Tampa, FL, ³NeuroStructural Research Labs, Inc., Tampa, FL, ⁴The Honors College, USF, Tampa, FL, ⁵USF College of Medicine, Tampa, FL ⁶Sanders-Brown Center for Aging, University of Kentucky, Lexington, KY; ⁷Dept Neuro Sciences, Rush University Medical Center, Chicago, IL

Cortical dendritic morphology (i.e. branching and spine configuration) may play an important role in Alzheimer's disease (AD)-related cognitive decline. This study assessed dendritic morphology in three clinical groups: Individuals with No Cognitive Impairment (NCI), with Mild Cognitive Impairment (MCI) and with mild to moderate AD. Formalin-fixed tissue blocks from the frontal (area 9) and the parietal cortex (areas 39-40) were stained with the Golgi method and all slides coded; layer II-III pyramidal neurons were then randomly selected for analysis by an investigator blinded to clinical status using the coded slides. In the parietal cortex, branching analysis revealed a significant progressive loss of branching that paralleled increasing cognitive deficits: e.g., NCI < MCI < AD. Dendritic spine density of these neurons, in contrast, was equally – and significantly -- reduced in both MCI and AD. In frontal cortex there was a different pattern: branching in MCI pyramidal neurons increased compared to NCI (a compensatory dendritic neuroplasticity?) followed by a subsequent significant reduction in AD. Dendritic spine density in layer II-III pyramids of frontal cortex also did not decrease in MCI but ultimately did decline in AD. This suggests that in the frontal cortex a compensatory mechanism may be attempting to mitigate the progressive breakdown of brain circuitry in order to optimize or prolong normal cognitive function.

Abstract #: **P 20**

Presenter: Vance Lambert

Research Mentor: Dr. Kenneth Ugen

Title: ANTI-TUMOR EFFECTS OF HIV VPR BASED PEPTIDES

Vance M. Lambert¹, Andrea N. McCray¹, Karrupiah Muthumani², David B. Weiner², Richard Heller¹, Kenneth E. Ugen¹ ¹Department of Molecular Medicine, University of South Florida College of Medicine, Tampa, FL 33612-4799 ²Department of Pathology and Laboratory Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA 19104

Viral Protein R (Vpr) is a 96 amino acid (aa), 14-kDa accessory of the HIV virus involved in translocating the provirus to the nucleus of host CD4+ target cells, necessary for viral replication. Exogenous Vpr also has been shown to induce apoptosis in rapidly dividing cells by interrupting the G2/M checkpoint in the cell cycle while normal cells are typically unaffected. Previous in vivo experiments with C57BL6 mice have shown that electroporated pVpr plasmids delivered intratumorally to established melanoma have resulted in complete regression of established tumors. Numerous other human cancer cell lines have been shown to undergo apoptosis when treated with exogenous Vpr. More recently, shorter 15aa peptides from the carboxy region of Vpr have been shown to induce apoptosis in multiple tumor lines as well verified by dye based cytotoxicity assays. Specifically, several Vpr peptides spanning carboxy aa numbers 65-83 induced significant (i.e. greater than 50%) in vitro growth inhibition/toxicity of murine B16.F10 melanoma cells and HeLa human cervical carcinoma cells. Vpr has been demonstrated to be a promising anti-cancer therapy based on its ability to induce cytotoxic effects on a variety of tumor lines, and is effective regardless of p53 expression. Vpr also possesses a pair of alpha-helical domains within the carboxy region under investigation that has demonstrated peptide transduction domains (PTDs) and allows proteins and other molecules to effectively transduce the plasma membrane of target cells. Other PTDs have been identified, and when conjugated to Vpr based peptides have increased the overall effectiveness of the cytotoxic effects. One such PTD, from the HIV Tat, when conjugated to Vpr peptides significantly increased cellular death. Overall, these smaller, peptide based therapies are attractive due to their high specificity for target molecules, effectiveness, and relatively low cost compared to current chemotherapeutic agents.

Abstract #: **P 21**

Presenter: Wai Wai Lwin

Research Mentor: Dr. Ronald Mervis

Title: Effect of melatonin on dendritic parameters in cortex of aging normal mice and a mouse model of Alzheimer's disease

Two cohorts of mice were evaluated to assess the effects melatonin in their drinking water. The first cohort was a comparison between normal aging wild type mice – with and without the melatonin. The second cohort was an assessment of an animal model of Alzheimer's disease – a comparison of transgenic APP/PS1 mice (which overexpress amyloid in their brains and develop senile plaques) which did or did not receive melatonin dietary supplementation. Both groups were given the diets from about 4 months and sacrificed around 7 months-of-age. The animals were sacrificed and the brains stained using the Golgi method. Analysis of dendritic branching of cortical pyramidal neurons showed that in the normally aging mice, the melatonin-enriched diet had no effect on the amount of the dendritic arbor. However, in the mouse model of Alzheimer's disease, the melatonin diet resulted in a significant increase in the amount of dendritic material. It is not yet known why the neurons of the APP/PS1 mice showed this response to the melatonin; nevertheless, it suggests that melatonin may exert a beneficial effect on maintaining adequate brain circuitry in a mouse model of Alzheimer's disease.

Abstract #: **P 22**

Presenter: Asef Mahmud

Research Mentor: Dr. Toru Shimizu

Title: A new digital imaging protocol for signal detection & distribution analysis in histological samples

The goal of this thesis was to create, explore, and test a new Digital Histological Analysis protocol for signal (eg, proteins) detection and distribution pattern analysis. Existing methods for visualizing and analyzing signals on microphotographs of slides depend on specialized software used to determine the overall optical values and trends across tissue samples in order to isolate dark spots as signals. However, this methodology does not account for weak staining or uneven lighting that often masks signals from detection. In addition, analysis of signal density patterns across tissue samples were mostly performed manually in a cumbersome and error-prone fashion. This new protocol uses unique software functions to identify signals more accurately by locally analyzing signals instead of comparing them to the rest of the slide. This allows signals to be accurately detected regardless of uneven staining or background noise. This function is also coupled with a specific color averaging filter used by image-editing software to graphically represent density patterns in a clear form with great efficiency and speed, which did not have a formal protocol beforehand.

Abstract #: **P 23**

Presenter: Daniel Matta

Research Mentor: Lucy Guerra, MD, MPH, FAC

Title: Testicular cancer: Differences between the ethnic groups

Lucy Guerra, MD, MPH, FAC, Phillippe Spiess, MD

Although there is evidence suggesting that the incidence of testicular cancer has increased in whites and African Americans in the United States, there is not much known about the trends among men of Latino background. This is why it is so important to dig deeper into this subject, to further understand a disease that affects so many males, but may have a relation with ethnic background. In this study, data from the National Cancer Institute's (NCI) Surveillance, Epidemiology and End Results (SEER) registries will be used to help determine whether testicular cancer is a more aggressive disease in Latino males versus other ethnic groups. I will also use articles from previous studies on this subject matter gathered from Internet search engines such as PubMed and Medline. The basis of the study is three-fold:

Firstly, I will do a thorough research of what testicular cancer is as a whole to better understand the disease as it applies to not only Hispanics, but also to all males in general.

Secondly, I will focus on the stage of diagnosis in which Latino men are diagnosed versus other ethnicities, the response that each ethnic group has to the treatment of the disease, the prevalence and incidence of the disease, the histological difference, if any between testicular cancer among these ethnic groups and the incidence of seminomatous tumors versus nonseminomatous tumors that are diagnosed among Latino men versus non-Latino men.

And, finally I will look at long-term survivorship of these patients with regard to ethnic differences in overall morbidity and quality of life related issues such as fertility.

Abstract #: **P 24**

Presenter: Scott Moradian

Research Mentor: Dr. Ronald Mervis

Title: MINIMAL TRAUMATIC BRAIN INJURY IN A MOUSE MODEL OF MULTIPLE CONCUSSIONS: EFFECTS ON CORTICAL DENDRITIC SPINES. Preliminary Findings.

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Clear morphological deficits are difficult to discern but there may be long lasting behavioral and learning disturbances, the basis of which is poorly understood. Mice were exposed to a weight drop of 10g (to the temporal right hemisphere) either only once, or for 2 or 3 times (with a week interval between mTBI episodes). An additional group was used to compare the effects a single 30g weight drop. All slides were coded and layer V pyramids (apical and basilar trees) from the injured hemisphere were randomly selected for spine analysis. Most notable in these early findings are: (1) a single mTBI episode appeared not to affect dendritic spines density; (2) two mTBI episodes resulted in reduced spine density in both apical and basilar trees; however, and surprisingly, (3) three 10gm mTBI episodes or a single 30gm mTBI episode was not associated with spine loss, but by an increase in spines. Although the time frames for these 2 groups are different, both these findings may be attributed to a compensatory dendritic hypertrophic response associated with neuronal dropout. Additional assessment of dendritic branching and stereological evaluation of neuronal numbers will further clarify the roles of these parameters in modifying cortical circuitry following multiple concussion-related traumatic brain injury.

Abstract #: P 25

Presenter: Kim Ohaegbulam

Research Mentor: Dr. Scott J. Antonia

Title: CCL21 in tumor immunotherapy

Chemokines are a class of small cytokines that have been found to play key roles in the migration patterns of the many different cell types in the body. CCL21 is a chemokine that actively recruits naïve T cells and mature dendritic cells into secondary lymphoid organs. Tumor size regression and protective immunity have been proven through the intratumoral administration of CCL21 in mouse models. The aim of this study is to evaluate the efficacy of CCL21 in cancer immunotherapy due to its immune cell chemotactic ability in human *in vitro* allogeneic models. A component of a cell based vaccine (K.GM.CD40L) H1944 was transduced with the adenovirus of CCL21 to express the chemokine in the vaccine and proved to induce the chemotaxis of T cells. Specifically tested was the ability of CCL21 to enhance anti-tumor immune responses promoted by the K.GM.CD40L that secretes GM-CSF and expresses surface CD40L. Human peripheral blood mononuclear cells (PBMCs) and irradiated allogeneic tumor (Tm) cells and the K.GM.CD40L were cultured with this CCL21 secreting tumor cell line (H1944.CCL21) for a time period of 2-5 days and cytokine production evaluated by ELISpot and ELISA assays. Overall, the concentration of IL-2 did not change in the absence or presence of CCL21, while the concentration of IFN- γ decreased in the presence of CCL21 and was unchanged in the absence of CCL21. These results have led to further optimization in *in vitro* and *in vivo* models that is currently ongoing.

Abstract #: P 26

Presenter: Arjun Rammohandas

Research Mentor: Dr. My Lien Dao

Title: Microsporidia as Opportunistic Pathogens in Residence; High Prevalence of Microsporidemia in Healthy Donors

Microsporidia are ubiquitous opportunistic parasitic unicellular eukaryotic pathogens that can infect a variety of species, including humans. Distinctive features of microsporidia include a spore wall composed of chitin and the presence of an internal polar filament which is protruded and used by the organism to pierce and inject a host cell with its sporoplasm in the infection process. A protocol was developed to isolate by dilution and differential centrifugation a 12,000 x g pellet from 0.5 ml samples of frozen blood obtained from healthy blood donors previously obtained from Dr. Chamizo (ACH, St. Petersburg, FL). Analysis of the pellet obtained by using a chitin stain and observation on the light microscope showed the presence of microsporidia in a number of samples. These results were further confirmed by binding of the spores onto a chitin-binding matrix, followed by *in-situ* immunochemical staining using a pan-specific antibody to *Encephalitozoon* species. Of the 28 samples tested so far 13 (46 %) were tested positive, denoting a high incidence of asymptomatic microsporidia carriers. Confirmation by polymerase chain reaction analysis is underway. Since the present report is the first to show that microsporidemia is prevalent in the asymptomatic population, it thus raises our concern for the use of blood harboring microsporidia in transfusion to immunodeficient or immunosuppressed children.

Abstract #: **P 27**

Presenter: Cody Shults

Research Mentor: Dr. Chad Dickey

Title: Ordered detection of tau aggregation in cells using tetracysteine motifs recognized by fluorescent FAsH arsenical dyes

The accumulation of neurofibrillary tangles in the brain is common pathology in Alzheimer's disease. The microtubule-associated protein tau is found to be hyper-phosphorylated in these tangles and can have adverse effects on the function of the aging brain. Current screening methods of tau aggregation are through in vitro studies using recombinant tau protein, and we wanted to develop a new method of detecting tau aggregation. With the recent advances in fluorescent detection, a tetracysteine motif that is recognizable by the fluorescent dye FAsH has allowed researchers to visualize protein function fluorescently within the cell. This motif consists of six amino acids (cys-cys-pro-gly-cys-cys), a small number when considering other fluorescent detection methods such as GFP (Green Fluorescent Protein) which is composed of 238 amino acids, and split GFP requires a 15 amino acid tag which then binds to a larger GFP protein containing 215 amino acids. These larger molecules may hinder proper protein folding and aggregation. The motif can also be split up as two separate cysteine pairs that can come together during interactions between tagged proteins. Here we inserted tetracysteine tags on both the N- and C-terminus of the tau protein, as well as other permutations in between, which will allow visualization of tau aggregation in transfected HeLa cell lines and provide clues about the arrangement of tau monomers within these structures. This system could be used to explore tau fibril formation in cells and would allow us to dissect mechanisms that can contribute to or prevent the aggregation of tau in vivo.

Abstract #: **P 28**

Presenter: Stephanie Stoner

Research Mentor: Dr. Svitlana Garbuzova-Davis

Title: Decreased microvascular density in the grey matter of ventral spinal cord in G93A mice modeling ALS

S. Stoner¹, P.R. Sanberg^{1,2}, and S. Garbuzova-Davis^{1,2}

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Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disease involving premature motor neuron cell death in the spinal cord and brain. Recently, it has been shown that the blood-brain barrier is compromised in G93A SOD1 mice (Garbuzova-Davis et al., 2007). Vascular problems also could be a potential cause of the motor neuron death. The aim of this study was to determine microvascular density (MVD) in grey matter of spinal cord of G93A mice modeling ALS at different stages of disease.

Cross sections of cervical and lumbar spinal cords of early-, late-symptomatic G93A and control C57BL/6 were stained with toluidine blue. MVD was measured in vessels per micrometer by counting blood vessels present in the grey matter of ventral horn and dividing by the area.

The results show a significant decrease in cervical MVD between control (2.84 ± 0.34) and early (1.58 ± 0.36) ($p < 0.015$) or late symptomatic mice (1.32 ± 0.11) ($p < 0.001$). Similarly, there were also significant decreases in lumbar MVD in early (1.40 ± 0.09) ($p < 0.002$) and late symptomatic mice (1.43 ± 0.11) ($p < 0.002$) versus controls (3.28 ± 0.44).

Overall, the decreased MVD observed in the spinal cords of G93A mice might account for ALS motor neuron degeneration resulting from metabolite buildup and/or insufficient nutrition.

Abstract #: **P 29**

Presenter: Jordan Watson

Research Mentor: Dr. Gwendolyn Quinn

Title: Puerto Rican Women's Knowledge of HBOC Genetics: A Comparison of Mainland vs. Island Puerto Ricans

Watson JB; Quinn GP; McIntyre J; Vadaparampil ST

Women with a *BRCA* mutation are at increased risk for hereditary breast and/or ovarian cancer (HBOC). Hispanic women may have a higher prevalence rate of *BRCA* mutations than other minority groups. There is limited information about knowledge of HBOC within this group. The purpose of this study was to compare *HBOC* knowledge among Puerto Rican women living on the Island and in the U.S. Community based methods were used to recruit women in Florida (n=20) and Puerto Rico (n=25) to participate in a survey about knowledge HBOC. Eligibility included: self-reported PR decent; aged 18 - 65; personal or family history of breast or ovarian cancer. Knowledge was assessed using the 11-item scale from the Cancer Genetics Studies Consortium. The results showed that knowledge levels were low across both groups but lowest for Puerto Ricans living on the island. Women were unaware of the prevalence of *BRCA* (island 92 %; 80% mainland) and 16% of respondents from the island sample were aware of limitations to ovarian cancer screening tests compared to 25% of mainland sample. This study supports the need for additional HBOC educational efforts targeted toward Puerto Rican women.

Abstract #: **P 30**

Presenter: Shana Williams

Research Mentor: Dr. Michael Vanauker

Title: Development of PH sensitive immune targeted niosomes

Drug targeting is a strategy that is studied to improve the delivery of disease specific drugs. Through drug targeting, the amount of drugs used and the risk of the patient developing associated side effects are reduced. In this project, we are developing a method to study whether a drug delivery vehicle, an immune-targeted niosome, can be taken up by a cell through endocytosis. This niosome is antibody-receptor specific and is targeted to areas of inflammation. Because the pH is lower in the lysosome and endosome of the cell than in other environments, an indicator sensitive to this change may allow us to verify that the niosome or its contents arrives inside these cellular compartments. We have identified a dye, SNARF-4F 5-(and-6)-carboxylic acid that has an emission shift from yellow-orange to red fluorescence when the pH shifts to below pH 6.4. It is our hypothesis that this dye can be encapsulated in the niosome and can be used to identify success of delivery to the area of interest. Our studies are designed to show that SNARF-4F 5-(and-6)-carboxylic acid encapsulated in a targeted niosome will display this emission shift in a pH environment similar to that of the cellular compartments.

Abstract #: **P 31**

Presenter: Chris Alexander

Research Mentor: Dr. Greg Mullins

Title: Foundation Health Monitoring

The goal of this program is to show how internal instrumentation can be used monitor and assess the health of bridge foundations. The gages installed during construction can and will be used to show traffic and wind load effects on the pier performance.

This is part of a larger program involving the entire bridge, but at present pertains only to the South Bound Pier 2 columns (interior and exterior) and Shafts 1 and 2 (2SB-1 and 2SB-2, respectively) under the exterior column. Therein, two types of strain gages and thermocouples will be installed to monitor three phases of the bridge/foundation system: (1) internal shaft temperature, (2) construction loads, and (3) long-term health monitoring.

Phase 1 Internal Temperature Monitoring: The internal shaft temperature increase due to the heat of hydration will be monitored for an extended period of time to better understand mass concrete effects in drilled shafts using high performance concrete (in this case Self Consolidating Concrete; SCC). This dovetails with on-going FHWA studies (and others) now addressing mass concrete effects in drilled shafts of all sizes as well as the use of SCC and low heat of hydration mixes to mitigate these conditions.

Phase 2 Construction Load Monitoring: The loads due to construction will be monitored as they increase and are distributed down the length of the shaft. Additionally, by correlating the number of box sections and their respective weights to the measured strain in each column, the column strain gages can be calibrated with increased confidence. These values will also be compared to more traditional means of computing load from concrete modulus and strain in the column.

Phase 3 Long-Term Health Monitoring: Using the calibrations/correlations developed during Phase 2, variations in shaft and column loads can be used to identify aberrant conditions that could then be used to alert officials to take appropriate action.

Abstract #: **P 32**

Presenter: Dustin D. Belyea

Research Mentor: Dr. Casey W. Miller

Title: Utility of Barrier Height Distributions for Modeling Junctions

Dustin D. Belyea and Casey W. Miller

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We demonstrate that including continuous and discrete tunnel barrier height distributions in otherwise traditional tunneling formalisms enables straightforward modeling of several phenomena important to tunneling. Random barrier height inhomogeneities significantly impact the tunneling device Performance, with the incurred errors strongly dependent on the variance. Temperature effects are addressed by transferring the energy distribution to the barrier potential energy, thereby enabling zero-temperature tunneling models to model temperature dependent tunneling. For discrete tunneling channels, a secondary, impurity-like channel is shown to dominate the device performance at surprisingly low levels. Finally, spin-filter tunneling is modeled with independent tunneling channels whose barrier heights are linked to spin-dependent barrier heights.

Abstract #: **P 33**

Presenters: Hong Ting (Sam) Chiu, Michael Gerdjikian, Angela Krause, Kyle Yeasting

Research Mentor: Dr. Maya Trotz

Title: The Use Of Metallic Oxides As An Economical Method For Arsenic Removal

Arsenic (As) is a common contaminant in drinking groundwater. The intake of contaminated water can result in arsenic poisoning and has caused numerous large-scale outbreaks around the world. Arsenic can be removed by commercially available materials, such as mineral oxide Kemiron. Unfortunately, however, these materials are neither affordable nor available to those in third world countries and some small communities.

The objective of this project is to investigate and develop an affordable, yet effective, process to treat drinking water so that it meets standards established by United States Environmental Protection Agency (USEPA). The primary methodology involves the use of rusted metallic elements, or 'scraps', containing a mineral oxide called iron(III) oxide (Fe_2O_3) to remove arsenic. The arsenic is filtered out with sand filtration and the arsenic concentration is then measured using a Varian DO Graphite Furnace Atomic Absorption Spectrometer. This project investigates and analyzes the relationship between arsenic removal, mixing time, and size of the metallic elements, or 'scraps', used for removal.

Abstract #: **P 34**

Presenter: Matthew Conrad

Research Mentor: Dr. Rudy Schlaf

Title: Design and Construction of a Growth Chamber for the Deposition of Layered Metal Back Contacts for CdTe Thin Film Photovoltaic Cells

M. Conrad, S. Gutmann, M. Wolak, and R. Schlaf

USF Department of Electrical Engineering

Thin film CdTe based solar cells promise to make solar energy conversion more cost effective. Currently, copper is used as a back contact, but copper slowly diffuses into the CdTe, which lessens the conversion efficiency. Our research will investigate layered metals with high work functions to replace copper. Consequentially, a physical vapor deposition chamber was designed and built to deposit thin films of these materials. The presentation will discuss the design and implementation of this chamber, as well as an introduction into the techniques needed to produce high quality thin films. The system includes a resistively heated sample heater to control the surface diffusion of the deposited materials. Vaporization of source materials is accomplished by implementing a resistively heated effusion cell, as well as an electron beam evaporator, which is used to evaporate materials of higher melting points. The ultra high vacuum of the chamber is generated by a turbo molecular pump in combination with a rotary vane roughing pump. Mechanical devices like gate valves, linear feed-throughs, and XY manipulators were installed for substrate transfer. A quartz crystal monitor measures the deposition rate of the evaporated material. First experiments performed with the set-up will be presented and analytical data illustrating the quality of the films will be discussed.

Abstract #: **P 35**

Presenter: Daniel Cruz

Research Mentor: Dr. Thomas Weller

Title: Development of an Automatic Compact Reconfigurable Channel Emulating Chamber for the Testing of Wireless Devices in Various Rigorous Environments

As the usage of wireless communications and devices continues to increase with modern society's advancement in technology and science, so does the need for wireless systems and devices to be functional in almost any environment, including those that present difficulties for wireless signal transmission due to multipath fading and other similar signal interferences.

Based on this need, the University of South Florida, together with the University of Vermont, created a compact reconfigurable channel emulating chamber (i.e. CRCE chamber) for the testing of wireless devices under simulated difficulties, set by the user, so that greater insight into the different problems and possible solutions of such environments could be presented quickly, accurately, and at a low cost. The chamber currently is able to function for wireless systems operating above 500 MHz and simulates a broad range of environments exhibiting wireless interference, distortion, multipath fading, and absorption (through the use of signal-absorbing carbon material).

Although operational, the chamber is being modified to increase reliability and flexibility, which includes creating a system to fluctuate the absorption material being used during an experiment and using a control program written in C or Java to allow for greater flexibility in user options.

Abstract #: **P 36**

Presenter: Howard Fox

Research Mentor: Dr. Alberto Sagues

Title: Oxygen Reduction Under Disbonded Coating of Epoxy Coated Rebar

Epoxy coated rebar (ECR) has been used as corrosion control of marine reinforced concrete bridges. In ECR, the epoxy acts as a physical barrier. Coating disbondment in ECR causes an increase in exposed steel substrate area and may support increased cathodic reaction.

This investigation intends to establish to what extent, if any, additional oxygen reduction occurs under the disbonded coating. Extended disbondment is created by cathodically polarizing test samples and the behavior is compared to a base case, where disbondment is much less.

Coating breaks were made on the surface of test ECR bars, which were placed in chloride-free simulated concrete pore solution (SPS) pH~13. The cathodic behavior was measured by cyclic potentiodynamic polarization (CPP). An initial CPP scan was performed as a baseline. The bars were then cathodically polarized to -1000 mV (SCE) for five days, to induce cathodic disbondment. CPP tests were conducted within 10 and 20 hours following that treatment. Tests were repeated after additional disbondment treatments.

Preliminary results indicate an increase in cathodic current compared to the baseline non-disbonded case. The findings to date indicate that considerable additional cathodic current can be supported by the disbondment zone. Results of continuation tests will be presented.

Abstract #: P 37

Presenter: Corey Garvin

Research Mentor: Dr. Jon C. Antilla

Title: Copper Catalyzed Reactions of Amidines



R = Allyl, OCH₃, F, Cl, Br, CN, Heterocyclic

Strokes are the third leading cause of death in the U.S., and a major contributor to long-term disability. Once a Stroke has occurred there are no therapies that can reduce brain damage at delayed time points greater than 6 hours. Research has shown that N,N'-di-*o*-totyl-guanidine (DTG) reduces neurodegeneration in rats that are induced with ischemic strokes and administered 24 hours after stroke onset. It has been shown that benzamidines are highly selective anti-protozoal agents against trypanosomes as well. The similarity between guanidines and amidines has opened the possibility of amidine use in stroke therapy. Our goal is to find innovative and cost effective ways to make amidines as anti stroke agents. Inexpensive and commercially available, benzamidine salt is reacted with aryl iodides to form the desired amidine analogues. After solvent screening was performed, DMF was chosen for its ease of use and superior yield; as well there is no need for a ligand to make the catalytic reaction successful. The conditions needed for the system are: 1 mmol benzamidine HCl, 1 mmol aryl iodide, 10-mol % CuI, 2mL DMF, and 2 eq. Cs₂CO₃ at 90°C for 24 hours. Wide varieties of aryl iodides were tested giving yields from 2% to 84%.

Abstract #: P 38

Presenter: Matthew Holland

Research Mentor: Dr. Rudy Schlaf

Title: Design and Optimization of an Ion Funnel for a Macro-Molecular Patterning System

M.Holland¹⁾, P. Henze¹⁾, M. M. Beerbom¹⁾, J.M. Anthony²⁾, and Rudy Schlaf¹⁾

¹⁾ USF Department of Electrical Engineering

²⁾ Elion Systems, Inc, Austin, TX

Directed assembly of nano-materials has remained one of the main challenges in nanotechnology applications. The presented research is part of a larger project to build a patterning device enabling the deposition of nano-materials in vacuum. Using electrospray injection one can transfer molecular ions into vacuum directly from solution without damage. During this process the ion beam needs to be collimated by means of ion optics to optimize transmission.

The first set of ion optics is an ion funnel, a series of 100 electrostatic lenses with an applied radiofrequency (RF) field, which is used to "guide" the ion beam. A number of studies have been performed examining the influence of different electrospray parameters such as distance between injecting needle and vacuum inlet, heating of the inlet, RF voltage potentials, or flow rate of the injected solution.

These studies revealed that electrosprayed droplets are being injected into the funnel depending on the spray parameters. These droplets are not affected by the ion funnel. This issue was resolved by introducing a Jet Disruptor lens (JD). The JD acts as a filter for high-mass particles such as droplets and prevents their transmission. This results in an increase in the quality of the transmitted beam.

Abstract #: **P 39**

Presenter: Scott Howard

Research Mentor: Dr. Jing Wang

Title: Fabrication of Photonic Crystals Using Macroporous Silicon

A photonic crystal is a material designed with a periodicity in its dielectric constant. This patterning, which is usually an alternation between a high-k dielectric and an air space, creates a band gap, a range of wavelengths that cannot propagate through the material. The wavelengths that cannot exist inside the crystal are on the same length scale as the lattice constant—the distance between the macroscopic features inside the crystal. I report on attempts to simulate such devices using industry-standard modeling software, and progress on fabrication of this device using macroporous silicon, a material that is created by applying a voltage to a silicon wafer and anodizing its surface through a mask, creating pores approximately 1 micron in diameter. “Micropearls,” novel nanostructures that can be fabricated with this technique, have not yet been tested for their ability to act as photonic crystals, so I have the unique opportunity to characterize their photonic band gaps.

Abstract #: **P 40**

Presenter: Nicole Hupalo

Research Mentor: Dr. Norma Alcantar

Title: Monitoring and Discerning the Conformational Change of the Most Common Peptide Related to Neuritic Plaques in Alzheimer’s Disease

Alzheimer's disease (AD) is a serious degenerative disease affecting millions of elderly individuals worldwide. Some of the most common symptoms include: loss of memory, cognitive function, and motile coordination, as well as social behavior alteration. The onset causes are not yet clear, however, three important hallmarks of this disease are known: amyloid beta peptide plaques formation (A β , primarily A β 1-40 and A β 1-42), presence of neurofibrillar tangles, and finally neuronal death. Our work is oriented towards understanding the mechanism of plaque formation and more recently the clearance of these plaques. In this work, we studied and monitored the different aggregation pathways followed by A β 1-40, A β 1-42, and their mixture (1:1). Atomic force microscopy is used as the main analytical tool, served to monitor and study the topological changes suffered by each case studied. It was observed that the mixture of these peptides aggregated at a faster rate forming dense plaques, this observation was confirmed with Transmission Electron Microscope (TEM). The understanding of the trend in aggregation patterns is an important contribution to the comprehension of our ongoing project: targeting Amyloid beta plaques using an immunotherapeutic approach for the prevention and treatment of A β plaques in the brain.

Abstract #: P 41

Presenter: Joshua Kuhn

Research Mentor: Dr. Sean Barbeau

Title: Enhancing security and decreasing data loss in TRAC-IT

TRAC-IT is a mobile Java application that runs on user's cell phones and acts as a GPS enabled trip diary. It reports user's locations to a central server as they travel and allows analysis of commuting patterns and vehicle occupancy statistics, and also enables the delivery of personalized real-time travel information such as traffic incident alerts back to the user. During the semester, we improved on two areas of the TRAC-IT program. First, the GPS data sent by the mobile application to the central server was originally sent unencrypted over the Internet. This presented a possible privacy risk to users, so we integrated encryption capabilities and evaluated its impact on battery life, a key concern in mobile applications. Secondly, the mobile application often loses its data connection to the server due to either transient interference or simply areas with low cell coverage. We implemented an innovative buffering [sjb1] mechanism along with a connectivity test in order to reduce the loss of location data.

Comment [sjb1]:

Abstract #: P 42

Presenters: Sean Motta, Adriana Chacon & Michelle Smith

Research Mentor: Kathryn De Laurentis, PhD

Title: Hands-free Wheelchair for Dance: Armrest Design

Sean Motta, Adriana Chacon, Michelle Smith, Kathryn De Laurentis, PhD, Merry Lynn Morris, MFA, Peter Schrock, Rajiv Dubey, PhD, Rehabilitation Robotics Lab, Dept. of Mechanical Engineering, USF
Contributors: John Camacho, Jeff Cama, Brent Savage, and Rick Livernois

The School of Theatre and Dance and the Department of Mechanical Engineering developed a hands-free wheelchair for dancers with disabilities. In order to meet the user's needs of comfort and feeling of safety, it's essential to design and ultimately develop armrests that do not inhibit the user's sense of freedom. The School of Theater and Dance requested armrests that could be used in different forms of choreography to suit particular aesthetic and functional needs. To target this we first brainstormed a variety of ideas and rated the multiple levels of importance, including: ability to support a 200lb vertical force located at the outer end point of the armrests; costs; manufacturability; ability to rotate 180 degrees in the horizontal plane and 180 degrees in the vertical plane; aesthetics, to include the possibility of illumination during performances; adjustable length, possibly telescoping armrests; adjustable height armrests; ease of removal; and ease of adjustment. This presentation illustrates three design ideas and their evaluation using the Cosmos application in Solidworks to test for bending, failure, and material choice. There has also been work done on the armrests' mechanisms of attachment to the chair. Future work involves actual device testing.

Abstract #: **P 43**

Presenter: Narin Persad-Maharaj

Research Mentor: Dr. Sean Barbeau

Title: Predicting Path and Destination in Real-time Using GPS-Enabled Cell Phones

This research focuses on a Path Prediction algorithm used to predict a traveler's route and destination in real-time based on GPS data from their GPS-enabled cell phone. Path Prediction can be used to enable a variety of services such as targeted and personalized traffic alerts, location-based advertising, and immediate traffic demand forecasting.

The algorithm avoids expensive computations by performing comparisons between shapes (spatial representations of a user's travel history), and lines (representation of their real-time path). Since the algorithm does not rely on road network information multiple modes of transportation such as bike, bus, and walking are supported. Previous versions of the algorithm predicted the user's route and destination using records that were explicitly defined by the user (i.e. starting and ending locations); the latest version performs predictions using records that were passively recorded over a period of several minutes to several hours (i.e. whenever the user turns his/her phone off or it dies). The results show that the algorithm correctly predicts the user's path and destination but additional statistics such as direction need to be incorporated into the shape data (past travel history) in order to disqualify routes which have opposing directions to the user's current path. Furthermore, probabilistic formulas can enhance the quality of the prediction given the current data and help eliminate false positives.

Abstract #: **P 44**

Presenters: Brent Savage & Jeff Cama

Research Mentor: Kathryn De Laurentis, PhD

Title: Design of a Remote Controlled Omni-directional Rotating Platform for Dance

Brent Savage¹, Jeff Cama², Sean Motta¹, Daniel Cruz³

Dept. of Mechanical Engineering¹ and Dept. of Computer Science² and Dept. of Computer Engineering³

This project involves the design and development of a moving platform with an independently rotating top to be used on the stage during theatrical and dance performances. This is a joint project between the University of South Florida's College of the Arts (Merry Lynn Morris) and the Rehabilitation Robotics Lab in Mechanical Engineering (M.E.) (Center for Rehabilitation Engineering and Technology) students. The M.E. students were given the task of, among many things, developing a sturdy, robust, easily maintainable, and inexpensive moving platform with a rotating top to add another choreographic element to Ms. Morris' unique style of dancing. Ms. Morris' performances involve the use of a variety of machines such as wheelchairs, motorized wheelchairs, and segways with a variety of performers including performers with disabilities to express the choreographic intent. The design objectives for the platform are that it can hold up to five-hundred pounds, is remote controlled, is omni-directional, and has an independently rotating top surface. It also has a removable surface, folding wing sections to collapse the unit down to fit through an average size doorway, and detachable ramp ends to be wheelchair accessible. Currently computer-aided analysis is being performed to evaluate the platform before actual testing.

Abstract #: **P 45**

Presenter: Eugeny Shakurov

Research Mentor: Dr. Alex Volinsky

Title: Effects of Mechanical and Thermal Stresses on Electrical Device Performance

Studies have shown that mechanically or thermally induced stresses can alter electrical device performance. The goal of this research is to quantify these effects. First, electrical devices will be manufactured on silicon wafers, and their unstrained electrical characteristics will be quantified. Electrical device output will also be characterized as a function of temperature. An Ionic Systems stress gauge will be utilized to quantify wafer bow due to externally applied forces and local heating from a point source. The electrical device output and the wafer curvature will be measured dynamically as the stress levels vary.

Abstract #: **P 46**

Presenter: Audrey Shipalov

Research Mentor: Dr. Miguel Labrador

Title: On the Implementation of a Capacity Estimator for Wireless Ad Hoc Networks

End-to-end capacity is a useful metric for network applications such as traffic engineering, QoS verification, peer-to-peer file distribution, video/audio streaming, admission control, etc. Although several tools have been developed to estimate end-to-end capacity and available bandwidth in wired networks, estimators for wireless ad-hoc networks are still to be developed. While the end-to-end bandwidth in wired networks is conveniently a constant value, that is not the case in wireless ad-hoc networks. Capacity in wireless networks is a variable value determined by the maximum rate that can be achieved when the resources along the path are not shared among competing traffic flows. This random nature of the bandwidth makes the path capacity estimation in wireless networks and its implementation in software a challenging task. We present the model of a new capacity estimation tool for wireless ad-hoc networks and discuss two critical aspects in the implementation of any estimation tool: time stamping packets and clock synchronization. The time stamping methods and the regression algorithm are implemented in the capacity estimator, which shows accurate capacity estimations.

Abstract #: **P 47**

Presenter: Mario Simoes & John Capille

Research Mentor: Dr. Redwan Alqasemi, Dr. Rajiv Dubey

Title: Wheelchair Mounted Robotic Arm Second Prototype Improvements

Individuals with impaired motor function of both the lower and upper body have significantly greater daily living complications than those with only lower body impairments. Wheelchair-mounted robot arm (WMRA) devices can serve to aid these wheelchair-dependant individuals in performing activities of daily living (ADLs) such as opening doors and manipulating objects around an individual's personal space. A second prototype of the nine-degree-of-freedom WMRA will use smaller diameter aluminum links and internal wiring and motor design to reduce the weight and bulk of the overall device. The second prototype will also employ smaller and lighter high-torque motors while maintaining the use of harmonic drive gear reduction. WMRA-II will be subject to the command of three possible user interfaces: A touch-screen tablet command input system, the Spaceball™ three-dimensional manipulation tool, or a brain-computer interface (BCI) which can be controlled by an individual completely devoid of personal motor function. WMRA-II will be constructed of machined and extruded parts designed and tested in SolidWorks/COSMOSWorks software.

Abstract #: **P 48**

Presenter: Francy Sinatra

Research Mentor: Dr. Stephanie Carey

Title: Comparison of Sit to Stand Motion of Prosthetic Knees

M. Jason Highsmith, PT, DPT, CP, FAAOP; Stephanie Carey, PhD; Rajiv Dubey, PhD

In order to determine the effectiveness of a prosthesis, studies must be conducted to analyze individuals using them. This study evaluates the ground reaction forces, while sitting down and standing up, of ten patients with unilateral transfemoral amputations. The purpose is to determine whether there is a significant advantage/disadvantage to the patients by the different features offered in the C-leg and polycentric knee. While using a motion analysis system, we collected three trials for each subject, five which were C-leg and five were polycentric knee users. After analyzing the data, it was observed that the prosthetic users placed most of their weight on their sound leg; which with time, the increased strain may lead to deterioration of the leg. It was also noted that the amputees would take twice as long to stand than individuals using no prosthesis. There was a difference between both groups; C-leg users placed more of their body weight on the sound leg than polycentric knee users. In conclusion, the slight advantage the C-leg provided to the users was not significant enough to prevent the deterioration of the sound limb by continuous overstrain.

Abstract #: **P 49**

Presenter: Daniela Soledad

Research Mentor: Dr. Maya Trotz

Title: Unique Partnerships to Understand Stormwater Ponds

Stormwater retention ponds play a vital role in flood and pollution control in communities throughout Florida and volunteer community programs have been successful at reducing local pollutant loads and maintaining pond health. Community funded revitalization programs in East Tampa, an economically disadvantaged urban area, include beautification efforts of stormwater ponds, but do not address water quality, and maintenance or potential impacts on the pond posed by increased accessibility and use of the ponds. This project builds a mechanism for monitoring water quality at a stormwater pond in East Tampa as well as on the USF campus through integration into curriculum at the Young Middle Magnet School and in the Civil and Environmental Engineering department at USF. It includes analysis of water quality (pH, DO, turbidity, conductivity, temperature, alkalinity, trace metals, phosphate, nitrate, TSS, TDS, COD) of five different ponds (4 at USF and 1 in East Tampa), development of an education pond model and community based activities to raise environmental awareness and increase student interest in the environmental engineering field.

Abstract #: **P 50**

Presenter: Jonathan Ticknor

Research Mentor: Dr. Jeffrey A Cunningham

Title: Hydrodehalogenation of 1,2,4,5-tetrachlorobenzene with palladium and rhodium catalysts

An analytical method was developed to measure concentrations of 1,2,4,5-tetrachlorobenzene (TeCB) in mixtures of water and ethanol. The ability to accurately determine these concentrations is an essential step in the development of a new technology to remove TeCB from contaminated soils. In the analytical method, TeCB is extracted from the water/ethanol solution into pentane, then analyzed by gas chromatography (GC) with electron capture detection (ECD). The main product of this semester's investigation was the development of a calibration plot, developed with standard solutions of known concentration, that can be used later to determine unknown concentrations of TeCB in experimental samples. Concentrations of TeCB as low as 0.1 mg/L can be detected and quantified with the method developed this semester. The calibration curve is linear ($R^2 = 0.9475$) over the concentration range 0.25 mg/L to 5.00 mg/L. Future experiments will seek to determine the effectiveness of palladium and rhodium catalysts in converting TeCB (a hazardous contaminant) to cyclohexane (a benign end-product). This will require the development of additional analytical methods to quantify concentrations of cyclohexane and benzene (an undesirable intermediate product), and thereby quantify the effectiveness of the catalytic hydrodehalogenation and the proposed soil remediation method.

Abstract #: **P 51**

Presenter: Eric Tridas

Research Mentor: Dr. Rudy Schlaf, Dr. Daniel Lim

Title: Deposition of *E. coli* O157:H7 Biosensor Coupons with Electrospray

Collaborator: Sonia Magana

The ubiquitous deployment of pathogen sensing requires a mass-manufacturable and cost effective technique for immunosensor waveguides used in biosensors. The current method used for producing biosensor waveguides is expensive and time consuming. Typically, a solution-based process is used where glass slides are immersed for extended periods of time (hours to days) in a number of solutions. The presented research will demonstrate that by using electrospray, this process can be accomplished with less material in minutes or even seconds. Electrospray thin film deposition is a method whereby *bio-molecules* can be directly deposited from solution on solid substrates with a high degree of control. Our research focused on the systematic exploration of spray parameters, and their influence on the thin film morphology and pathogen capture efficiency. It was demonstrated that the electrosprayed waveguides were pathogen-specific and had at least equal sensitivity to conventional sensor waveguides.

Abstract #: **P 52**

Presenter: Elizabeth Grumbach

Research Mentor: Ms. Leisa Clark

Title: Images of Women in Contemporary Television: A Critical Analysis of *Dark Angel*

Created by James Cameron and Charles H. Eglee, *Dark Angel* is a science fiction television series that follows the story of Max Guevara, a genetically-engineered soldier created by a secret government project, as she attempts to find her place in a futuristic American world ravaged by an electro-magnetic pulse. This project is an exploration of the gender discourse within the *Dark Angel* universe.

Progressing from the first season to the second, the show shifts its focus from the main character's quest for identity and issues of race and sexual orientation raised by other female characters to a concern with the overall tolerance of a society in which a new race of people, the bio-engineered escapees of a government project, battle for acceptance. The purpose is to critically examine, through a thorough comparison of the first and second seasons of the series, how and why specific female characters lose their agency in this transition. This project will trace the evolution of discourse around gender within the series, decode the presented images of women as first empowered and then sexualized, and reveal a contemporary approach towards women in the action genre of television programming.

Abstract #: **P 53**

Presenter: Bradley L'Herrou

Research Mentor: Dr. Giovanna Benadusi

Title: Humanism in Early Modern England: A Visual Study of a 17th Century Fencing Treatise

In early modern England, there existed a simultaneous eagerness to embrace Italian humanism and a reluctance to abandon England's own established culture.

A microcosm of this cultural tension can be found in English fencing treatises of the turn of the 17th century, particularly Joseph Swetnam's "Schoole of the Noble and Worthy Science of Defence," published in 1617.

My thesis is that Swetnam imitated Italian forms, but applied the imported practices to his English context, resulting in a fundamentally English martial system.

My approach is to provide Swetnam's manual the additional illustrations he desired, that were so typical of Italian codices of the time. Visually representing Swetnam's fencing positions allows us to see the Italian flavor more clearly. We can see that visually and statically, Swetnam's system greatly resembles the Italian methods, although in motion and principle it more greatly resembles the English martial tradition.

Twelve different positions are illustrated to match Swetnam's descriptions, and they include offensive, defensive, and guard positions. "Paradoxes of Defence" and "Brief Instructions upon my Paradoxes of Defence" by George Silver (1599) are used as examples of English fencing tradition, and "Lo Schermo, overo Scienza D'Arme" by Salvator Fabris (1606) is used as a benchmark of contemporary Italian tradition.

Abstract #: **P 54**

Presenter: Ann-Michelle Van Ecopel

Research Mentor: Dr. Leisa Clark

Title: Re-Envisioning the Femme Identity

Two main gender presentations, "butch" and "femme," dominated the lesbian community before the women's liberation movement of the 1960's and 1970's. "Butch" women presented themselves in a masculine way, and "femme" women presented themselves in a feminine way. Feminist of the time viewed the butch and femme lifestyle as a replication of the traditional roles within heterosexual relationships.

The 1990's brought to lesbian culture a surge of novels, anthologies, and other writings about the experiences of butches and femmes. Many books focused the gender transgression of butch women while others focused on the complex relationships that butches and femmes have to one another. I believe this disproportionate focus on female masculinity has attracted gender theorists because patriarchal culture favors masculinity and devalues femininity. Writings about the experiences of femmes have only recently begun to appear in academia. My research will assess works dealing with butches and femmes, and the availability of scholarship about queer femininity. I hypothesize that a disproportionate body of work focuses on butchness while relatively few works explore queer femininity. An inventory of the available literature will illuminate the overshadowing of femininity within gender theory and lead to a better understanding of the politics of theoretic production.

Abstract #: **P 55**

Presenter: Maria Velasquez

Research Mentor: Professor Lou Marcus

Title: Atemporal Space

As an artist, I believe it is imperative to respond to issues pertaining to our daily lives, our communities, and the fabric of our society. I have always been intrigued by a place's history as a way to understand its people and culture, and my research involves Space as what enables a culture to both subsist and flourish.

I believe that one of the maladies of our society today is that we live in places where communities are invisible. Places in which our housing and planning problems are only addressed at a surface level, without a real consideration of the needs of the community, and that this is due to our lack of understanding of its people. The point of departure of my creative process is research about a place's history, and I have largely focused on Oral History interviews of Tampa. Conceptually, my work takes as its base the writings of cultural theorists, philosophers and critics. I incorporate this research into my work as a way for the viewer to engage with the past, and I consider it to be not only educational but inspiring.

My Presentation in the Undergraduate Research Symposium will trace my art making process and how it has been influenced by my research experiences. I will concentrate on different stages of development of the piece "Atemporal Space", which I created for my Bachelor of Fine Arts Senior Thesis.

Abstract #: **P 56**

Presenters: John Camacho & Holly Morris

Research Mentor: Dr. Kathryn De Laurentis

Title: Design Development of a Hands Free Wheelchair Control with Consideration of Current Spring Support Testing

Kathryn J. De Laurentis, PhD, Merry Lynn Morris, MFA, Peter Schrock, Rajiv Dubey, PhD

According to the 2000 U.S Census Bureau, there are more than 21.2 million people who have mobility impairments. A Hands Free Wheelchair control modification was created by the Robotic Rehabilitation laboratory in collaboration with the School of Theater and Dance in response to the need for proper assistive technology to assist disabled users with rehabilitation and recreation activities. This was achieved by replacing the traditional joystick with a motion sensing apparatus connected to the seat of the wheelchair. Previous research has determined the difference between using metal and urethane springs that facilitate centering the seat, as they relate to the control and balance of the wheelchair, in consideration of the range of users' weight and response of the wheelchair. In light of this, current research involves the development of designs to improve user comfort, increase response to user input, and ease of user adaptability. Such research includes electromechanical improvements such as adding a voltage regulator and refining certain mechanical mechanisms. Planned refinement involves designing an axis slot for the sensor rod to make the bracket system simpler to dismantle and replace the existing spring support system. This poster will present the current progress.

Abstract #: **P 57**

Presenter: Courtney Chapman

Research Mentor: Dr. Cheryl L. Kirstein

Title: The effects of ethanol exposure during adolescence on ethanol-induced dopamine responsiveness in the nucleus accumbens septi in adulthood in male rats

In humans and animals, there are differences in alcohol consumption and physiological responses to alcohol between adolescents and adults. To examine this in an animal model, rats will be injected daily during adolescence with one of two doses of ethanol (EtOH) or saline. Locomotor activity will be measured at four time points during ethanol exposure. Rats will undergo abstinence for 14 days followed by assessment of EtOH induced dopamine (DA) release in young adulthood. Rats exposed to the lower ethanol dose are expected to demonstrate increased locomotor activity, while those exposed to the higher dose of EtOH are expected to demonstrate decreased locomotor activity. Temporal and maximal increases in EtOH -induced DA levels in the nucleus accumbens septi (NAcc) are expected to be highest in animals chronically exposed to the lower EtOH dose relative to those chronically exposed to the higher dose via conditioned responsivity. These differences along with neuronal development likely play a key role in development of substance abuse disorders.

Abstract #: **P 58**

Presenter: Emily Helmrich

Research Mentor: Dr. Robert H. Tykot

Title: The Ancient Roman Diet: Using Stable Isotope Analysis of Human Bones to Determine the Diets of Imperial Roman Populations

This study analyzes the stable carbon and nitrogen isotope ratios of human bone collagen and apatite samples to determine the diets of individuals from Imperial Roman times. Bone samples of 52 individuals found at the Roman burial sites of Casal Bertone and Castellaccio Europarco, from graduate student colleague Kristina Killgrove at UNC Chapel Hill, will be investigated. Analysis of bone collagen provides information on dietary protein while the bone apatite, or carbonate makeup, is used to determine the whole diet; both collagen and apatite analysis represent the average diet of the individual over the last several years of life. The bone collagen and apatite samples have been prepared in the Laboratory for Archaeological Science under the direction of Professor Robert H. Tykot. Preparation includes cleaning and weighing the samples to undergo a series of specific chemical processes to remove unwanted contaminants. The isolated collagen and apatite samples were then processed using stable isotope mass spectrometers at the USF Paleolab in the College of Marine Sciences. I will determine if there were any differences between individuals found at Casal Bertone and those buried at Castellaccio Europarco. I will also report on if there were any dietary differences based on sex, age and social status within each site. These findings will be compared with other studies on ancient Roman diets.

Abstract #: **P 59**

Presenter: Akash Parekh, Sarina Amin, Patrick Blackburn & Rohini Komarla

Research Mentor: Dr. Wayne Westhoff

Title: Water Purification as a Preventive Public Health Measure in the Dominican Republic

Resource-poor countries have limited access to potable water and often have governments that lack the resources to provide health education programs. Documentation on intervention methods to provide an affordable, sustainable solution is scarce. This project will design and implement an intervention to reduce waterborne diseases in isolated mountainous villages in the province of Monseñor Nouel, Dominican Republic. The project is community-based, working with in-country partners and community leaders to formulate an intervention by delving into the perceptions of the villagers, providing clean water education, and tailoring our initiative to address socioeconomic, social, and cultural issues. A water assessment, using a door-to-door sampling methodology, will measure the social and economic status, knowledge, attitude, and beliefs of households and provide a framework for the likelihood of project sustainability. An intervention including installing household filters will follow the assessment. Process evaluation of the filter efficacy will be documented. The one-year project will conclude with a final evaluation phase with recommendations for future direction. The study, although with limitations, has the potential to be replicated and built upon to improve health standards among other populations in need of clean water.

Abstract #: **P 60**

Presenter: Alexandros Tapper

Research Mentor: Dr. Amy Stuart

Title: Mercury Exposure Routes from Dental Amalgams and Methods of Reduction

Silver dental amalgams are commonly used by dentists to fill cavities in their patients' teeth. This type of filling material contains approximately 50% mercury by weight. Mercury is known to produce health effects in exposed individuals, depending on the form of the element and dose that is involved in the exposure. The objectives of this study are to quantify the routes of exposure to mercury in a dental office, determine the effectiveness of management practices and to discover potential methods of reducing exposures. First a comprehensive literature review was completed. Dental professionals were then observed in their offices and also interviewed using a semi-structured questionnaire. Finally, a mass balance model of mercury exposures was developed using a STELLA systems modeling software. Research indicates the importance of reducing mercury exposure routes especially in point sources such as dental offices.

Abstract #: **P 61**

Presenter: Jennifer Alam

Research Mentor: Dr. Lynn Martin

Title: Variation in innate immune activity mirrors invasion history among house sparrow populations

Organisms are often released from pathogens when they invade areas outside their native range. This enemy release may allow reallocation of resources to physiological processes promoting success in new areas (e.g., reproduction) and away from less useful, but comparably costly, ones (e.g., immune function). We tested the hypothesis that damped innate immune function, a particularly costly immune defense, promotes invasion success in one of the world's best avian invaders, the house sparrow (*Passer domesticus*). As predicted, the most recent invaders (Kenya) were least capable of controlling gram-negative bacterial infections *in vitro*; native birds (Sweden) were most competent, and introduced populations to North America (arriving in the mid-1800's) were intermediate. Baseline corticosterone did not match this pattern. Moreover, innate immunity did not change over 30 minutes post capture (in two populations), although corticosterone responses were damped in the recent invader. Intriguingly, body mass variation mirrored immune variation among populations. Within populations, neither body mass nor corticosterone explained immune variation. However, a significant relationship was noted between innate immunity and body mass. Because invasion history is confounded by latitude in the present comparison, additional sampling is needed. Nevertheless, our results suggest that immune allocations may be integral to range expansion in this, and perhaps other, species.

Abstract #: **P 62**

Presenter: Christina Brown

Research Mentor: Dr. James Garey

Title: An Analysis of the Diversity of Sulfur Oxidizing Organisms Utilizing the Sox Pathway

Analyzing the diversity of microbial communities allows researchers the opportunity to gain insight into the biogeochemical processes taking place in a particular environment. Sulfur metabolism in microorganisms is one such process that can be monitored with molecular techniques. The diversity of sulfur oxidizing organisms can estimate the amount and type of sulfur oxidation occurring in a specific environment. The Sox pathway is used by sulfur oxidizing bacteria to oxidize thiosulfate (S_2O_3) to sulfate (SO_4). In order to evaluate the diversity of SoxB utilizing bacteria in an environmental sample DNA probes were designed to amplify the *soxB* gene, an integral part of the Sox pathway. These probes were then tested on the community in the two uppermost layers of a Winogradsky column and used to generate a list of DNA sequences from that environment. Additionally, a clone library of *soxB* genes was generated. EstimateS was used to approximate the diversity of sulfur oxidizing bacteria that use SoxB in this community. 16S primers were used to evaluate the diversity of all microbes in the Winogradsky community to determine what portion of the community is represented by sulfur oxidizers.

Abstract #: **P 63**

Presenter: Kris Hahn

Research Mentor: Dr. Bill J. Baker

Title: Synthesis of the C16 – C25 portion of Palmerolide A

Kris Hahn, Matt Lebar, Bill Baker

Extractions of *Synoicum adareanum*, a tunicate indigenous to Antarctica and commonly found in the shallow waters near Palmer Station, have yielded polyketide macrolides known as the palmerolides. Palmerolide A is of particular interest due to its potent cytotoxicity and selectivity against melanoma cells which in turn makes it a viable candidate for use as an anti-cancer drug. In anticipation of laboratory preparation of palmerolide A, a retrosynthetic scheme has been devised to yield three subunits that when combined will result in the total synthesis of the macrolide portion of the compound. The synthesis of the first fragment, the C3-C14 portion, has been completed with desired functional groups attached which will allow for the coupling of the subsequent fragments. The second fragment will have to incorporate complementary functional groups to the first fragment to successfully duplicate palmerolide A as well as exact stereochemistry around all stereocenters. This synthesis will utilize chiral pool starting material which ensures a quick, reliable route to an enantiopure product. This paper reports on efforts toward the synthesis of the C16-C25 portion which will later be joined with the other two subunits to generate palmerolide A.

Abstract #: **P 64**

Presenter: Seung-eun Jang

Research Mentor: Dr. Johnny El-Rady

Title: Review of *Pneumocystis jiroveci* Pneumonia

Pneumocystis pneumonia is best known to be a leading opportunistic fungal infection in the lungs of immunosuppressed patients; the infection is prevalent among patients with AIDS, HIV, and those that are receiving immunosuppressive therapy. During 1980s, in early stage of the acquired immunodeficiency syndrome (AIDS) epidemic, approximately 20,000 patients were infected with *Pneumocystis* pneumonia per year, which was about 90% of patients with AIDS; the clinical importance of pneumocystis still lies today, as it was the leading source of infection and mortality during AIDS epidemic. This distinctive organism belongs in a fungal kingdom under by phylogenetic means, but its physical properties belong to those of typical pathogens. Because of its anomalous qualities and inability to be isolated and cultured in vitro, there are discordances among scientists regarding the general characteristics of *Pneumocystis jiroveci* such as life cycle and classification of the organism, which affects the methodology of diagnosis and prevention of acquiring *Pneumocystis* pneumonia. Characteristics, history, classification and taxonomy, target population, proposed life cycle, diagnosis, treatment, and molecular and genetic aspect of this organism are presented. This review of *Pneumocystis jiroveci* conveys the organism and builds upon multiple viewpoints claimed by scientists.

Abstract #: **P 65**

Presenter: Lisha Luttenton

Research Mentor: Dr. Bill Baker

Title: Accumulation of Vanadium, Manganese, and Nickel in Antarctic Tunicates

Lisha A. Luttenton, Matt D. Lebar and Bill J. Baker

Department of Chemistry, University of South Florida, 4202 E Fowler Ave. CHE 205A, Tampa, FL 33620

Tunicates, marine organisms also known as sea squirts, often sequester rare metals such as vanadium, manganese, and nickel. These rare metals are thought to be utilized by tunicates as a means of defense. Tunicates have been known to accumulate metals by exploiting organic chelators. Tunicate-derived chelators are being tested as possible therapeutic agents for those who have diabetes. Our library of Antarctic tunicates was screened to identify organisms with high concentrations of rare metals. The freeze dried tunicates were digested in hot concentrated acid and then analyzed via atomic absorbance spectrometry. Tunicates containing an exceptional amount of vanadium, manganese, and/or nickel will be further studied to identify any organic chelator present.

Abstract #: **P 66**

Presenter: Rachel Merte

Research Mentor: Dr. Jennifer Collins

Title: Africa's Climate Change

The change of air temperature at 2 meters above the Earth's surface is investigated for Africa between 1948 and 2008 using both the National Center for Environmental Protection / National Center for Atmospheric Research reanalysis modeled data and the UK's Climate Research Unit's observed data set. Since the globe has been warming, it is hypothesized that the continent of Africa displays these warming trends. Trends in the data are observed by examining the slope of the linear regression and confirmed performing the non-parametric Mann-Kendall test. Both data sets show significant increasing temperatures with time. Furthermore, by considering the early period 1948-1975 compared to the more recent period 1976-2008, Africa shows greater temperature increases in the more recent period than anywhere else on the globe.

Abstract #: **P 67**

Presenter: Emily Mevers

Research Mentor: Dr. Suzanne Strom

Title: Detecting H₂O₂ produced by the ichthyotoxic flagellate *Heterosigma akashiwo* and its possible effects on other microbial organisms

Emily E. Mevers * (Suzanne Strom); Shannon Point Marine Center, Western Washington University; Anacortes, WA, 98221

The phytoplankton, *Heterosigma akashiwo* produces harmful algae blooms that affect several nations' aquaculture industries. Reactive oxygen species (ROS) are thought to be the toxicological mechanism that causes mass mortality in fish, but this experiment focused on the effects of ROS on microzooplankton, potential consumers of *H. akashiwo*. It is important to know how *H. akashiwo* affects microzooplankton grazers, because it is still unknown why *H. akashiwo* forms these harmful algae blooms. This experiment was executed by determining the concentration of H₂O₂ produced by *H. akashiwo* and the toxicity of H₂O₂ on three local microzooplankton species. The results of the toxicity experiment indicated that a concentration of 10⁻⁵ M H₂O₂ causes a significant mortality in the ciliates *Metacylis* sp. and *Eutintinnus* sp. This was slightly higher H₂O₂ concentrations than the known production of H₂O₂ by *H. akashiwo* under a conservative estimate for the bloom cell density. However, for both *Oxyrrhis marina*, a heterotrophic dinoflagellate and *H. akashiwo* the concentration of H₂O₂ had to reach a concentration greater than 10⁻³ M to have a significant affect on the mortality rate. It was determined that *H. akashiwo* produces H₂O₂ between 7.5-13.5 μM during a moderate bloom size for the Puget Sound. Therefore, we propose that the toxicological mechanism in *H. akashiwo* could indeed be ROS produced by *H. akashiwo*.

**Department of Chemistry: University of South Florida*

Abstract #: **P 68**

Presenter: Rosemary Persaud

Research Mentor: Dr. Bill Baker

Title: The Chemical Investigation of Antarctic Marine Organisms for Anti-Malarial and Anti-Leishmanial Compounds

R.A. Persaud,¹ J.H. Noguez,¹ T.S. Mutka,² D. E. Kyle^{2,3} and B.J. Baker^{1,3}

¹Department of Chemistry, ²Department of Public Health and ³Center for Molecular Diversity in Drug Design, Discovery and Delivery, University of South Florida, 4202 East Fowler Avenue CHE205, Tampa, Florida 33620

Malaria and Leishmaniasis are two of the thirteen neglected tropical diseases responsible for over 500 million severe infections each year. With the growing resistance of the parasites responsible for these diseases to current treatments, the search for new drugs is of utmost importance. In an effort to combat this resistance, a number of Antarctic specimens were extracted and screened against these parasites. Organisms that showed any activity against either parasite were further separated via chromatography and the compounds responsible for the activity were isolated using bioassay guided fractionation. This paper reports on our efforts towards the high throughput screening and bioassay guided fractionation of these extracts against these malaria and leishmania parasites.

Abstract #: **P 69**

Presenter: Kortnie Pugh

Research Mentor: Dr. Jennifer Collins

Title: Temperature change in South America

Temperature change is analyzed for South America from 1948-2007 (for the Southern Hemisphere wintertime (June-July-August – JJA). With a recent increase in global temperatures, it is hypothesized that warming may be observed over this continent. We also consider the El Niño phenomenon compared to other natural changes or human influence to account for the observed temperature changes. We use 2 meter surface air temperature data from the NCEP/NCAR reanalysis. The mean temperature is above 24°C in the Amazon region and in the northern part of Northeast Brazil from 1948-2007. However, in the period 1976-2007, the area with temperatures above 24°C increases in size. In general, we observe warmer temperatures in South America in 1976-2007 compared to 1948-1975. The results here suggest that the warming is not likely due to the El Niño phenomenon, therefore other natural factors or an anthropogenic influence is considered to be the cause.

Abstract #: **P 70**

Presenter: Elaine Rindfuss

Research Mentor: Dr. Lynn Martin

Title: Effects of acute stress on immune redistribution in captive and wild birds

Elaine M Rindfuss¹, Joshua R Kuhlman¹, Alyssa K Ackerman², Daniel R Ardia², Jessica L Fegely², & Lynn B Martin¹, ¹ University of South Florida, Department of Integrative Biology, Tampa, FL 33620, USA, ²Franklin and Marshall College, Department of Biology, Lancaster, PA, 17604, USA.

Stress is typically thought to depress immune function and thus increase the likelihood of infection. However, over short periods, many immune functions are elevated by stressors, especially in the skin and periphery, an observation that led to the immunoredistribution hypothesis: acute stressors should enhance immune protection at areas likely to be wounded. Implantation of a small dermal sponge is an effective method of evaluating immunoredistribution in lab rodents. The purpose of this thesis was to validate this technique in domesticated zebra finches, *Taeniopygia guttata*, and compare their responses to wild house sparrows, *Passer domesticus*. Captivity alone imposes stress on wild birds, so immunoredistribution may have been prevented in wild-caught sparrows in unnatural environments. Individuals of each species were either immediately implanted or restrained for 30 minutes then implanted (i.e., acute stress). Acutely stressed zebra finches were expected to show greater infiltration of leukocytes as compared to unstressed zebra finches. House sparrows were also expected to show less infiltration due to the additional stress of captivity. Data analyses are ongoing and will provide a foundation for testing more questions regarding natural stressors (e.g., predation, territorial conflicts) on immunoredistribution in wild animals.

Abstract #: **P 71**

Presenter: Matthew L. Trinidad

Research Mentor: Dr. James Garey and Haydn Rubelmann

Title: Diversity of Sulfur Reducing Microorganisms Using the Dissimilatory Sulfite Reductase (DSR) Pathway in the Environment

The diversity of sulfur reducing microorganisms in the environment can give researchers a better understanding of the biogeochemical changes that take place in a given area. Sulfur reduction or sulfur metabolism plays a vital role in the world's sulfur cycle. Monitoring the amount of sulfur reduction taking place in the environment can estimate the size and diversity of the microbial communities taking part. The Dissimilatory Sulfite Reductase pathway is used to reduce sulfate (SO_4) to hydrogen sulfide (H_2S). To be able to estimate the amount of sulfite reduction in environmental samples DNA primers had to be designed to amplify the *dsr A* and *B* genes, which are both key factors in the DSR pathway. In order to test these primers, samples were obtained from the bottom layers of a Winogradsky column. The *dsrAB* gene fragment was amplified and a clone library was created and sequenced. 16S primers were similarly used to look at the overall microbial population in the Winogradsky column and determine the proportion of the population that was utilizing the dissimilatory sulfite reductase gene.

Abstract #: **P 72**

Presenter: Nhan Tu

Research Mentor: Dr. Lynn Martin

Title: Expressions of cytokines in house sparrows

House sparrows have successfully invaded all over the world, yet little knowledge is available to explain the physiological mechanisms underlying this. Some evidence shows that resource allocation among competing physiological functions plays a role, such as the energy trade-off between immunity and reproduction. When comparing the risks and benefits, it is advantageous for them to devote maximum effort into reproduction and away from immune defense because invasive species harbor fewer infections than native species. In order to understand their immune function, we will compare expression of certain pro-inflammatory cytokines and toll-like receptors. These expensive proteins are part of the innate immune system, which is the immediate defense that the body relies on in the presence of pathogens. By limiting immunity without suppressing the entire immune system, the energy yield will be greater. My current goal is to sequence these critical genes and develop protocols for their quantification.

Abstract #: **P 73**

Presenters: Alicia Williams

Research Mentor: Dr. Jennifer Collins

Title: Central Florida Superfog – Carnage on Interstate - 4

Drivers on central Florida's primary urban corridor, Interstate 4, encountered a blinding mixture of superfog that led to an accident resulting in 5 deaths and 38 injuries. Although widespread fog was in the area, it was the addition of fine smoke particulates that abruptly dropped the visibility to zero. A nearby prescribed burn went out of control when relative humidity dropped below what an automated system forecasted. Control was regained before sunset but spot fires occurred overnight as fog began to develop. Due to light easterly winds and the valley-like topography of the area, fog formed. Microscale processes affected smoke migration, and effective methods to monitor smoke and visibility were lacking. This event was beyond the resolution of effective satellite monitoring, so increased human oversight is necessary to prevent similar events. This research discusses the geographical, meteorological, and climatological elements which played a significant role in this disaster.

Abstract #: **P 74**

Presenter: Jessica Collard

Research Mentor: Ms. Leisa Clark

Title: I Swear by My Pretty Floral Bonnet, I Will End You

This paper examines some of the major and minor characters found in the Joss Whedon's television shows "Buffy the Vampire Slayer," "Firefly," and Whedon's motion picture "Serenity." This paper asserts that the majority of the characters in the Whedonverse are indeed feminists and challenge the traditionally ascribed gendered stereotypes of Western culture. First the typical "masculine" and "feminine" stereotypes are defined, as well as what will be objectively defined as a "feminist"; then the characters' own personality characteristics and actions are analyzed to see if they meet the predetermined definition of a "feminist" and if their actions challenge the typical gender stereotypes. This study hypothesizes that the characters in the Whedonverse are strong feminist characters that employ the idea of equality between the sexes. I feel this research is important because Joss Whedon's characters defy the archetypal feminine characteristics found in today's pop culture.

Abstract #: **P 75**

Withdrew from Event

Abstract #: **P 76**

Presenter: Christina Kawamoto

Research Mentor: Dr. Edward Levine

Title: Relationship Among Person-Vocation Fit, Person-Group Fit and Job Satisfaction: Do the Beholders' Primary Needs Matter?

C. Kawamoto, E. Levine & L. Yang
University of South Florida

In applied and research settings a desire exists to discover factors that can increase production and employee well-being. Research has found that an individual's fit (degree of match) with certain aspects of his or her work environment (organization, vocation, supervisor, job, work group) can significantly affect outcomes such as job satisfaction, performance, and turnover. Research has also shown that some variables may alter these relationships by enhancing or buffering against these effects. However, gaps in our knowledge remain including such issues as the primacy of one type of fit vs. another. In attempts to fill some of these gaps, surveys will be administered to 150 undergraduates to investigate the relationships between person-vocation and person-group fit and job satisfaction. In addition, the study will examine possible mediating effects of personal needs. It is predicted that increased person-vocation and person-group fit will augment job satisfaction ratings. Furthermore, elevated need for achievement will enhance the impact of person-vocation fit; elevated need for affiliation will enhance the impact of person-group fit. Hypotheses will be mainly evaluated by regression analyses. Determining the relationships between fit, outcome variables and moderating factors may aid considerably in employee retention, selection and individual well being.

Abstract #: **P 77**

Presenter: Tony Kurian

Research Mentor: Dr. Robert Brinkmann

Title: Gardening Practices in Hillsborough County, Florida

The purpose of this study is to assess the extent of dooryard gardening in Hillsborough County and to determine what is grown in these gardens. There has recently been a general increased interest in local gardening in the Tampa Bay area which has been bolstered by efforts by City of Tampa Councilwoman Mary Mulhern and due to the interest of dooryard gardening brought on by the current economic downturn. Open-ended interviews with local gardeners were conducted and photographs of their gardens were produced. Interviews include questions such as "Are any of the plants grown seasonal?", "Do you save money by gardening?", and "What does your garden mean to you?" Results from the study will be presented on a website and used to identify the best practices for gardening in the area. In addition, the project documents the diversity and sociocultural and historical contexts of gardening practices in Hillsborough County by memorializing successful gardens and gardeners in visual and print materials that may include calendars, fliers, and reports.

Abstract #: **P 78**

Presenter: Jeffrey Many

Research Mentor: Dr. Michael Fountain

Title: Critical analysis of factors relating to the emergence of integrated biotechnology clusters

Critical Analysis of Factors Relating to the Emergence of Integrated Biotechnology Clusters

The rise of the biotechnology industry, fueled by important advances in the information technology and biological sciences fields, has been remarkably quick. The industry is poised to become a dominant economic factor in the first half of the 21st century and shows a particularly strong tendency to form clusters within well-defined geographical regions. A historical analysis was conducted on the industry to identify critical factors in the formation of clusters. Next, these critical factors were used to create a ranking of the top tier of biotechnology clusters in the US. Finally, a cursory evaluation of five of Florida's metropolitan statistical areas (Tampa, Orlando, Miami/Ft. Lauderdale, Jacksonville, and Gainesville) was conducted to evaluate their capacity to develop a major, top tier biotechnology cluster.

Abstract #: **P 79**

Presenter: Jenna McCulloch

Research Mentor: Dr. Kiki Caruson

Title: Predicting Voter Turnout in the 2008 Presidential Election: Assessing the Impact of Battleground Status and Early Voting Opportunities

The United States has consistently had one of the lowest voter turnout rates amongst all established democracies (Wattenberg, 15). Yet, in recent years, presidential elections have become increasingly competitive. For example, in 2000, George W. Bush won the state of Florida by just 537 votes (Maines et al, 1A). The purpose of this empirical study is to determine if competitive presidential elections increase voter turnout. Specifically, my study utilizes ordinary least squares (OLS) regression and data from the 2008 presidential election to determine the relationships between seven independent variables and voter turnout (the dependent variable). My primary hypothesis is that there is a positive relationship between a state's electoral competitiveness and voter turnout for that state. I also evaluate the relationships between voter turnout in a state and the following explanatory variables: early voting opportunities, the number of campaign visits by presidential candidates, advertising spending by presidential candidates, age variable at the state level, education level in a state, and median income in a state. My research shows that more competitive states do have higher voter turnout rates. Interestingly, states with early voting opportunities do not have significantly higher turnout rates than those without such laws.

Abstract #: **P 80**

Presenter: Liotta Noche-Dowdy

Research Mentor: Dr. Erin Kimmerle

Title: Radiography as a Tool for Contemporary Anthropological Research

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Department of Anthropology, University of South Florida

In anthropology, radiography is commonly utilized for the purpose of human identification and has also been useful in assessing cause and mechanism of death, history of trauma, the location of foreign bodies, projectile trajectory, pathological conditions, and in mummy studies. The less conventional use for radiography in research is to generate samples of contemporary people for developing quantitative standards that are population-specific. It is difficult to obtain representative, osteological samples of target groups, yet radiographs offer a practical solution. However, the accuracy and reliability of radiographic measurements as a direct substitution for bone measurements have been called into question.

The authors derived linear measurements from long bones, which were then compared to their corresponding radiographs (total n=57). The investigators took blind measurements and used Pearson Correlation analysis to assess accuracy and reliability. Wilcoxon tests were used to establish whether there was a significant difference between the radiograph and the dry bone measurements. Regression analysis created bone-specific preliminary models that estimate long bone distances from radiograph distances.

The goal of this pilot study is to determine whether or not radiographs are a valid tool (H1: accurate and precise) for anthropometric analyses and to provide methodological tools that enable researchers to accurately and reliably account for magnification error when using linear measurements derived from radiographs. This research will make radiography a more useful tool to facilitate the generation of population-specific standards for the biological profile that may be used in forensic death investigations and investigations into war crimes.

Abstract #: **P 81**

Presenter: Teresa Perez

Research Mentor: Dr. Randy Borum

Title: Local Law Enforcement's Response to Terrorism

This study investigates how local law enforcement patrol officers perceive their roles and responsibilities in homeland security activity, and how they perceive the risk of a terrorist event in their jurisdiction. The sample is composed of patrol officers from the Tampa Police Department. The sampling strategy was designed to maximize the dispersion across shifts and district assignments. Officers completed a brief anonymous survey during roll call, which asked about the following: specialized training, identification of local terrorist group activity, risk concerns about certain kinds of targets and extremist activity, the perceived likelihood of a near-term terrorist attack and how prepared they feel to respond, post-9/11 changes in patrol officers' roles and behavior, and items identifying gender and years of law enforcement experience. The analysis compares risk and role change perceptions between officers whose law enforcement experience began before or after the events of September 11, 2001.

Abstract #: **P 82**

Presenter: Erfilie Petitfort

Research Mentor: Ms. Leisa Clark

Title: A Journey of Self-Empowerment: Women Reclaiming Language and Breaking Dependency within a Patriarchal Society

Dependency on men is an issue that has long been addressed through various feminist movements. Women must learn to be self-sufficient and independent, yet there is one key way in which women have never been liberated from dependency on men. Women have always depended on men for their last/parental name. At birth women are given their father's last name and when married it is changed to the husband's last name. This socialist feminist issue robs women of their own identity.

This reality continues to exist because women are defined by the male figures present in their lives. In many cases when a prefix such as Ms. or Mrs. is used women completely lose their identity as a person. Through the use of that prefix her first name is lost and she is only identified in terms of the man who aided in her conception or the man to whom she is married. This loss of identity is one that has been perpetuated through time and our patriarchal society.

Abstract #: **P 83**

Presenter: Ralph Reid

Research Mentor: Dr. Susan MacManus

Title: Where the Ladies Are: Gender and the Florida Judiciary

Ralph O. Reid IV (Dr. Susan A. MacManus), *University of South Florida*
Department of Government and International Affairs

While there are many eligible female candidates for the Florida judiciary, fewer women than men choose to run, leaving Florida judgeships dominated by men. It is ostensible that women are as likely as men to be elected to these judgeships, but very little research has been done into determining the effect (if any) gender has on judicial candidates' successes.

In this study, a comparative analysis is made between the number of men and women who ran for judicial office in 2008 in Florida, and their electoral success. These data are then compared to the same comparative data from elections in 2006. The contributions of factors like incumbency and type of election are also analyzed. This information is examined statewide, and at each major court level in Florida: Supreme, Appeals, Circuit, and County. This study aims to determine whether men or women are statistically more likely to win judicial elections.

It is expected, based off initial data available from 2006, that female judicial candidates will be equally successful to men in 2008. However, an increase is expected in their success rates in close elections, especially with the recent paid to gender issues in politics.

Election data were computed from various databases obtained from the Florida Department of State, Division of Elections (<http://election.dos.state.fl.us/>), and from the various county supervisors of elections websites.

Abstract #: **P 84**

Presenter: Amanda Stokes

Research Mentor: Dr. Darlene DeMarie

Title: The Words and Photographs of Military Personnel's Children to Convey What Their School Is Like

The purpose of this study is to gain a better understanding of how 1st – 5th grade children view their school using autophotography. Young children who might otherwise be poor at expressing themselves through standard and more conventional verbal interview methods might find a greater freedom of expression through the means of photography and might be better able to express themselves beyond the limits of their vocabulary. Students from Tinker Elementary School were interviewed using a standardized set of questions and were asked to take three photographs to show others what their school was like. The verbal interviews were transcribed and were then coded combining both quantitative and qualitative processes. In short, children's responses and photographs were categorized by general themes and were then quantitatively compared. ANOVAs were computed to compare the frequency of themes by age and by achievement level. The goal of this study was to gain new insights into how children viewed their schools via the autophotographic process. The poster will include both the overall statistical and categorical results as well as examples of individual children's photographs and verbal responses.

Abstract #: **P 85**

Presenter: Ryan Thurman

Research Mentor: Dr. Jamie Goldenberg

Title: To Confirm or Not to Confirm: Effects of Mortality Salience on Stereotypic Preference for Barack Obama

From the perspective of terror management theory, cultural beliefs and stereotypes about peoples' position within the culture, function to provide protection from existential concerns associated with the awareness of mortality. Building upon previous terror management theory findings, the present study seeks to examine the relationship between reminders of mortality and stereotypic preference in reference to President Barack Obama. One hundred and twenty participants will take part in the online questionnaire. Participants will be induced to think about their own mortality or a control topic. Then, participants will be exposed to either a photograph of Obama playing basketball (stereotype-confirming) or bowling (stereotype-non-confirming). It is hypothesized that participants for whom mortality is salient will have greater preference for the stereotype-confirming Obama compared to the control condition. It is also hypothesized that mortality salience will have no effect or will produce more negative evaluations of Obama for participants exposed to the stereotype-non-confirming Obama photograph. Therefore, as the nation speaks of a need for "change," the present research may reveal that when mortality is salient, we really want more of the same – that is, out-group members, regardless of prominence, to confirm the stereotypes associated with their race.

Abstract #: **P 86**

Presenter: Shelby Tudor

Research Mentor: Dr. Kiki Caruson

Title: Swimming against the Tide: Analyzing the Success of Challenger Candidates in 2008 Congressional Elections

According to the Center for Responsive Politics, members of the U.S. House of Representatives in the 2006 mid-term elections were reelected ninety-four percent of the time. However, even with this type of a statistical deterrence, challenger candidates, many for the first time, continue to compete in elections in an attempt to unseat the incumbent.

This study, conducted with statistical data from the 2008 congressional election for the U.S. House, attempts to identify campaign factors that facilitate challenger success in U.S. House elections. The research utilizes data from seventy-eight (78) U.S. House district races in order to predict which factors increase the likelihood of challenger success.

The factors under review in this thesis are election scenarios, types of challengers, incumbent strength, party variables, and campaign finance measures.

The purpose of the research is to examine campaign factors that lead to challenger success in congressional elections. Informing challenger candidates of the factors that increase the likelihood of election success will help to cultivate increased competition for U.S. House seats.

Abstract #: **P 87**

Presenter: Jennifer Ludvigsen & Letitia Washington

Research Mentor: Dr. Tammy Allen

Title: Gender and Career Success

Due to much advancement during the last century women are emerging into what used to be male-dominated work forces. However, most existing research on careers is based on men's careers. The purpose of the present study is to determine whether gender influences how individuals define career success.

Previous research notes that women think about non-work factors when choosing their career (e.g., work-family balance; Diamond, 1989). This may be due in part to the fact that women still carry out the majority of household duties and childcare regardless of employment or contribution to family income (Kirchmeyer, 2006). For these reasons, we hypothesized that women will define their career success more in terms of non-work factors than men. Accordingly, we theorized that women view promotions and compensations as less important parts of career success than do men, but they view overcoming obstacles as more important.

Data was collected through interviews and focus groups. To test hypotheses, the percentages of male and female responses for the relevant categories were compared.

Results showed that women were more concerned with overcoming obstacles, but number of responses regarding non-work factors was identical for men and women. Men considered advancement and compensation more important.

Abstract #: **P 88**

Presenter: Stephanie Misoslavac

Research Mentor: Dr. Russell Johnson

Title: The Effects of Role Stressors on Organizational Citizenship Behavior: A Meta Analysis

A great deal of research in organizational psychology has been devoted to increasing employees' job performance. One component of job performance is organizational citizenship behavior (OCB), which refer to extra behaviors that individuals perform which are not required by their job yet they contribute favorably to organizational effectiveness. Examples of these behaviors include boasting about one's company while not on the premises and volunteering to train new employees. Research has found that work stressors have a negative impact on employee job performance, including OCB. The objective of this study is to estimate the overall relationships of role stressors (i.e., role ambiguity, role conflict, and role overload) with OCB. In order to accomplish this, a quantitative review (meta-analysis) of 22 existing studies was conducted. It was expected that role stressors are negatively related to OCB and that role stressors will have stronger detrimental effects on OCB than they do on the performance of mandatory job tasks. Results of this meta-analysis will benefit organizations in that they will know where to focus more attention to increase social capital organization-wide through ideas, support, and cooperation of all employees.