11th annual Undergraduate Research Symposium

March 1, 2010

J. Wayne Reitz Union

University of Florida

www.scholars.ufl.edu

Welcome

Welcome to the University of Florida's annual Undergraduate Research Symposium. The symposium is organized by the University of Florida Honors Program and sponsored by the Office of the Provost to provide undergraduate students from all academic disciplines with the opportunity to present their research through panel or poster presentations.

While the majority of students presenting are members of the University Scholars Program, participants in the symposium represent a variety of undergraduate research programs.

About the University Scholars Program

The University Scholars Program provides students with the exciting opportunity to conduct research with a University of Florida faculty member. Students begin their research in the summer and continue through the following academic year. By participating in the program, students are provided an opportunity to apply what they have learned in the classroom.

Many participants in the University Scholars Program have earned national recognition in fellowships, grants, and other scholarship competitions. They have published in a variety of journals and presented at regional and national conferences in their field.

The annual deadline to apply for the University Scholars Program is March 1. USP is open to undergraduate students studying in all academic fields. For more information, visit *http://www.scholars.ufl.edu*

Schedule Overview

9:45-10:30am	Session 1 Panel presentations, 2nd floor Reitz Union Rooms: 282, 284, 285, 286, 287, 272-273, 276-277, 278-279
10:45-11:30am	Session 2 Panel presentations, 2nd floor Reitz Union Rooms: 282, 284, 285, 286, 287, 272-273, 276-277, 278-279
	Session 1 Poster presentations, Reitz Union Rion Ballroom
12:00-1:00pm	Program, Reitz Union Auditorium Welcome – Dr. Kevin Knudson, Director of UF Honors Program Speaker – Dr. Joe Glover, Provost Best Paper Awards – Dr. Creed Greer, JUR editor Dance performance – Megan Kendzior, University Scholar Closing Remarks – Melissa Johnson, USP Coordinator
1:00-1:45pm	Reception, Reitz Union Rion Ballroom
2:00-2:45pm	Session 3 Panel presentations, 2nd floor Reitz Union Rooms: 282, 284, 285, 286, 287, 272-273, 276-277, 278-279
	Session 2 Poster presentations, Reitz Union Rion Ballroom
	Undergraduate Research Opportunities presentation on "The Value of Undergraduate Research," 288-291 Reitz Curtis D. Byrd, Director of Special Programs and Assistant Director of the McNair Scholars Program
3:00-3:45pm	Session 4 Panel presentations, 2nd floor Reitz Union Rooms: 288-291, 284, 285, 286, 287, 272-273, 276-277, 278-279

Best Paper Award Winners

Qualitative

Scholar: Geeta Aneja

Mentor: M. J. Hardman

Title: *The Cultural Transition of Second Generation Indian-Americans: Bridging the Socio-Linguistic Gap Between Continents and Generations*

Scholar: Sara Stout

Mentor: Stephanie Smith

Title: *Melville's Ragged Edges: Multiple Narrators and the Search for Truth in Melville's Moby-Dick and Billy Budd*

Quantitative

Scholar: Sergio Gonzalez

Mentor: Max Nickerson

Title: *The Interaction Between Competition and Predation on the Survival and Growth of Two Neotropical Hylid Tadpoles*

Scholar: Sebastien Millette

Mentor: Brent Reynolds

Title: *Effect of Radiation on Brain Tumor Stem Cells*

Dance Performance: Witness

University Scholar – Megan Kendzior

Mentor – Neta Pulvermacher

Witness was choreographed by Megan Kendzior, a senior BFA dance major. Witness is a collaborative dance work with the live, original accompaniment of Frank Ferraro on the accordion. In Witness, four women amidst rows of old shoes, explore the thin line between humane and inhumane and investigate the questions raised about the choice between the two, in the face of great adversity. This project serves as an investigation of the transparent yet defining boundary of human nature, drawing directly from the monstrosity and horror of World War II and the Holocaust. The research objective is to reveal the manner in which art can express tangible, complex and historical research, specifically through the medium of physical dance theater. In another word, Witness offers an avenue of embodying history, both personal and collective, through movement, music and theater.

Utilizing research from the choreographer's detailed personal history, conflicting religious background and intersecting bloodlines, the work blends gesture and emotion to provide a resonating experience. Embedded within this personal research is an imagined but detailed account of Koncentration Lager Auschwitz. The resulting work, Witness, delves into the horrors of the Holocaust as narrated by the somber breath of the accordion.

Panel Presentation Descriptions

Session 1 ~ 9:45am – 10:30am

Session 1A : Health-Related / Biological Sciences, 282 Reitz

Mitochondrial Ribosomal Proteins S18B and S18C dependent translation of mitochondrial subunit genes ~ *Jehan Shah*
The purpose of this project was to determine the role that Mitochondrial Ribosomal small subunit protein S18 B and S18 C play in mitochondrial protein synthesis. These proteins extend into Shine-Dalgarno like region of the bacterial ribosome. The Shine-Dalgarno region in bacteria is responsible for the initiation of translation. Thus, our hypothesis was that the S18 B and S18 C are responsible for a unique set of mitochondrial protein since the mitochondrial ribosomes are heterogeneous and interference with either of the S18's is not compensated by the other.

Responding for drug-associated stimuli ~ *Chirag Kulahalli*
Stimuli associated with drugs play an important role in drug-taking behavior. In this study, two groups of rats responded for either sucrose or sucrose + alcohol reinforcers respectively by pressing one lever, while they could obtain stimuli associated with the respective reinforcer (conditioned reinforcers) on another lever. Differences between the groups in responding for sucrose versus sucrose + alcohol as well as for sucrose or sucrose + alcohol conditioned reinforcers were examined.

A preliminary evaluation of a theory based structured physical activity program for improving fitness in populations with an intellectual disability ~ *Krishna Dipnarine*
Populations with intellectual disabilities (ID) have higher rates of obesity, lower cardiorespiratory fitness (aerobic capacity), and muscular health than populations without ID. The purpose of this study is to evaluate the efficacy of a theory based physical activity intervention to improve these health outcomes in twenty young adults with ID. Preliminary results show the sample modestly improved body composition, significantly improved aerobic capacity levels, and increased muscular conditioning from baseline to mid-intervention observations.

Session 1B : Social Sciences, 284 Reitz

A Study of Semiotics: Pictures of Hillary Clinton and Sarah Palin During the 2008 Presidential Elections ~ *Michelle Harris*
Using semiotics for a qualitative analysis of still photographs from Time Magazine, I focused on the media representation of Hillary Clinton and Sarah Palin during the 2008 Presidential elections. By studying visual aspects such as layout, photographer's intention and composition in pictures containing Clinton or Palin, I determined dominant themes and analyzed possible impressions that would affect the media representation of Clinton and Palin as female political candidates in a powerful and male-dominated national election.

Corporate Social Responsibility Content, Media and Networking ~ *Alexander Wise*
Corporate Social Responsibility (CSR) is the built-in function of corporations deals with corporations' adherence to legal, ethical, and cultural standards. CSR is a growing field with strong support in communities and businesses; much of this support is online. A survey will be conducted in the next few weeks documenting the way these online communities share and consume information about CSR, helping to pinpoint the types of CSR programs information these communities want most, and in what type of media format they prefer to receive it.

Student migration as a factor of state higher education subsidy decisions ~ *Rebecca DeSimone*
The federal government enjoys a high return on investment in public higher education from primarily higher tax revenues and less demand for government subsidies of the average college graduate. State governments fund public education, however, the states only see a return on that investment if the subsidized student decides to stay in the state after graduating. I hypothesize that states that experience more out-migration also spend less on public degree-granting institutions and scholarships.

Session 1C : Biological Sciences, 285 Reitz

An Analysis of Environmental Factors Influencing Shark Attacks in Florida: Relative Effects of Sea Surface Temperature and Chlorophyll ~ *Sunita Chutkan & Cari Herrington*
Understanding the environmental influences on shark behavior is crucial to mitigating the likelihood of attacks on people, especially in Florida, where the incidences of shark attacks are highest in the world. Using a Generalized Additive Model, we determined whether sea surface temperature and chlorophyll, an indicator of productivity, were correlated with incidences of shark attacks. Sea surface temperature was found to be an important factor during incidences of shark attacks while chlorophyll was less correlated.

Role of Reactive Oxygen Species in Nanotoxicity ~ *Sarah Connolly*
This project focuses on observing the presence of reactive oxygen species (ROS) in mouse fibroblast model cells when exposed to nano-titanium dioxide (nTiO2) utilizing a series of fluorescent probe assays. Cells were exposed to varying concentrations of nTiO2 (12.5-400μg/mL) for 24, 48, or 72 hours, after which the fluorescence intensity was measured. Results indicated more ROS was generated with greater amounts of nTiO2, which may have harmful effects on cell function.

The Effects of Hyperglycemic Conditions on Osteoclast Differentiation and Function ~ *Whitney Howard*
Type 2 diabetics (T2D) have complications due to the effect their diseases have on the immune system. Periodontal diseases, infections of the gum tissue, are such complications. Diabetics tend to have more severe and longer lasting periodontal disease than non-diabetics. One component of periodontal disease is alveolar bone degradation due to osteoclast activation. Here we demonstrate that intrinsic factors of T2D and hyperglycemia may affect osteoclast differentiation and/or function.

Session 1D : Humanities / Fine Arts, 286 Reitz

The New Scramble for Africa: China's Growing Influence in Africa & the United States Response ~ *Xavier Monroe*
The goal of this research is to examine an issue that has only recently developed on the international scene. By focusing on the sentiments of American, Chinese and Nigerians on Chinese influence on the African continent, pertinent contributions to the field of historical and foreign policy can be made. As many historians and policy makers have added to the knowledge exploring Cold War economics, politics and diplomacy, I plan to contribute to the newly developed field of China-Africa and United States-Africa economics, politics and diplomacy. The opportunity to explore this topic will provide greater insight into the modern "Scramble for Africa" and the role Africa is playing in the twenty-first century.

On the Burkeian Representative Anecdote and the Longinian Sublime ~ *Rachel Belcher*
Drawing from Longinus' On the Sublime, for my Rosetta Stone, and a contemporary rhetorical theorist, Kenneth Burke as my helpful, insightful assistant, I offer my definition of the most persuasive example, the representative anecdote.

SUSTAINABILITY+INDUSTRIALIZATION: structural design of a solar-powered house ~ *Laura Ettedgui*
This project presents an assessment of various design parameters for sustainable, small-scale building structures. It involves an evaluation of the relationship between architecture and structural engineering in terms of environmental considerations, as well as the relationship between sustainability and industrialization at this scale of construction. The Solar Decathlon competition provides a context and a model for the investigation.

Session 1E : Social Sciences, 287 Reitz

Connectious: A content agnostic recommender system ~ *Steven Buss*
Connectious is a content agnostic recommender system intended for personalized news feeds. Utilizing the data that users have already generated on other websites has been a goal throughout the project; therefore Connectious has been designed to use any arbitrary list of (user,article) pairs to build recommendations. Methods for analysis include the Jaccard coefficient and probabilistic latent semantic analysis. The initial results are encouraging, but there are many approaches left to try.

The Evolution of English Education: An Historical Examination of Justifications for English Education in the Mid-20th Century American Secondary School ~ *Brittany Richmond*
From the 1930s to the 1950s, curricular recommendations for American Secondary English Departments focused more on promoting larger socio-political rationales than improving students' understanding of the English language. I examine the origins and development of these changing rationales and analyze the educators' recommendations and justifications for keeping English in the high school curriculum. I primarily investigate the civic purposes for teaching English and how secondary educators believed it could create better national and global citizenship.

Study of cultural factors associated with attitudes toward corporal punishment ~ *Christopher Adalio*
Although academic research suggests that corporal punishment is an ineffective form of child discipline, the majority of parents in the United States support its use. The purpose of this study is to investigate the cultural factors associated with favorable attitudes toward corporal punishment. A secondary data analysis of 2023 respondents' answers to the 2008 General Social Survey was conducted to compare attitudes between races, ethnicities, religions, political identification and United States regions.

Session 1F : Physical Sciences, 272-273 Reitz

Highly Compact Exponentially Correlated (EC) Wavefunctions for the Lithium Atom ~ *Victor Albert*
Compact wavefunctions can prove to be extremely valuable tools for understanding fundamental quantum mechanical systems and have been shown to be both highly accurate and computationally efficient. Exponentially correlated (EC) functions have been constructed to depend not only on electron-nuclear distances in the exponent, but electron-electron distances as well. We have added linear and second-order pre-factors to these functions to further improve accuracy. We present energies for Li that we have obtained from few-term exponentially correlated function expansions.

Initial Studies on Combining CSC and Tracker Information for an Upgraded L1 SLHC Trigger ~ *Brian Williams*
Over the next couple of years the LHC is expected to double its instantaneous luminosity per cross sectional area. This increase in luminosity calls for major upgrades to the way the CMS triggering works. We study the effects of initiating triggering within the CMS tracking system. The primary focus of my research is to find the best possible algorithms for various calculations in the hind-set of the high pileup that will be present with the new instantaneous luminosities.

Solid-State Deuterium NMR Study of Methyl Rotation in Precisely Branched Polyethylenes: Understanding the Effect of Branch Spacing on Chain Packing ~ *Christopher Reeg*
New synthetic methods for preparing branched polyethylene have been developed in the research group of Professor Ken Wagener of UF Chemistry, in which deuterated methyl groups are placed on every 9th, 15th, and 21st carbon along the polymer backbone. We are studying these new polymers using solid-state deuterium NMR in the Bowers lab. Based on differences in the relaxation times of the two polymer phases, we can draw conclusions about the activation energy of methyl rotation in both the amorphous and crystalline phases of each polymer.

Session 2 ~ 10:45am – 11:30am

Session 2A : Health-Related / Biological Sciences, 282 Reitz

The journey home: avian winter homing response to forest cover ~ *Chelsea Heatherington*
With increasing pressure from urban and agricultural expansion, the effect of habitat loss and fragmentation on forest birds is of central concern. This study attempts to use translocation trials to inform conservation efforts by addressing three main objectives: (1) to determine winter homing behavior success, (2) to assess the effect of forest cover on homing behavior, (3) to determine differences between species on homing behavior response.

Expression of Cancerous Inhibitory Protein 2A (CIP2A) in Oral Squamous Cell Carcinoma ~ *Jennifer Waters*
Cancerous inhibitory protein 2A (CIP2A) interacts with a proto-oncogene and inhibits a tumor suppressor, causing malignancy. The aim of the study was to identify the correlation between CIP2A gene expression and oral squamous cell carcinoma. CIP2A gene expression was analyzed by quantitative real-time RT-PCR. Results indicate that CIP2A gene expression is upregulated by 1.41-fold in oral cancer patients compared to controls. Further investigation is required to elucidate the implication of CIP2A in oral cancer.

Need for Bilateral Thalamic Deep Brain Stimulation (DBS) to Address Unsuccessful Single-Sided Procedure for Tourette Syndrome: A Case Report ~ *Andrew Resnick*
This case report aims to discuss unilateral versus bilateral Deep Brain Stimulation (DBS) in one patient with Tourette Syndrome (TS). This study presents the case of a 47-year-old male who initially underwent right unilateral ventralis oralis/centromedianus-parafascicularis (Vo-CM/Pf) region DBS implantation for suppression of self-injurious tics as well as obsessive-compulsive behaviors. Single-sided procedure on the right side was indicated after an MRI documented the possibility of a vascular abnormality at the left thalamus.

Session 2B : Social Sciences, 284 Reitz

Evaluating the Effects of Organic Honey Production on Subsistence Farmer Incomes in Ndola, Zambia: A Case Study ~ *Stephen Morgan*
Organic agriculture has become a key instrument in economic development programs to accomplish the dual objectives of raising rural incomes and conserving valuable environmental resources. The Kafakumba Development Center located near Ndola, Zambia is utilizing an organic and sustainable honey operation to supplement the incomes of local subsistence farmers. This project completed an empirical case study of the program to assess the economic and social impacts on all partners in the program.

The Importance of a Franchised Automobile Dealer Network to the New General Motors and the United States of America ~ *Andrew Starling*
The advantages and disadvantages of possessing large franchised automobile dealer networks were examined in the context of a post-bankruptcy, quasi-nationalized General Motors. Larger dealer networks not only provide cost benefits to the consumer, but also allow the manufacturer to realize higher revenues. Considering that the cost to the manufacturer of maintaining a large dealer network is virtually nothing, General Motors and the White House Auto Task Force were mistaken in terminating independent franchised auto dealers during restructuring.

Comparative Analysis of Newspaper Coverage of China's Economic Involvement in Sudan ~ *Jessica Gable*
I wanted to compare the newspaper coverage given to China's involvement in oil and weapons trade in Sudan during the year 2004 in a comparative analysis of three different countries: the United Kingdom, the United States, and the People's Republic of China. To do this, I analyzed the London Financial Times, the Washington Post, and China Daily for qualitative information on the content and context of the references to China's Sudan policies.

Session 2C : Biological Sciences, 285 Reitz

Role of LSD1 in Snail-Mediated Repression of E-cadherin ~ *Alison Ponn*
The forward/backward transition between epithelial (tightly attached, differentiated) cells and mesenchymal (unattached) cells is crucial to cancer metastasis. The transcription factor called Snail mediates epithelial-mesenchymal transition (EMT). Snail represses E-cadherin, a protein that aides in making cells epithelial, with the help of another protein, LSD1. I will be discussing EMT in more detail and the ways that these three proteins regulate this process.

LRMP and Calcium Signaling in Lymphocytes ~ *Laura K. Fishwick*
Lymphocyte-Restricted Membrane Protein (LRMP) is a type-II trans-membrane protein that is regulated during B-cell and T-cell maturation, whose aberrant expression is associated with lymphoma and autoimmune diseases. In this study, we characterized the function of LRMP using basic immunochemistry techniques with exogenous human LRMP in HeLa cells and endogenous LRMP in BJAB cells, a human B-cell line. We found that LRMP interacts with nuclear-envelope proteins and IP3R to help regulate calcium signaling in maturing lymphocytes.

Incorporating fungal plant disease into multiple grazer controls of salt marsh primary production ~ *Marc Hensel*
Understanding multiple consumer effects is an emerging field in ecology, yet few studies have incorporated pathogens into community interaction theory. Cordgrass, the dominant foundation species in southeastern US salt marshes, has recently experienced fluctuations in productivity due to the interactive effects of consumers, climate, and fungal disease. Observations suggest that a previously overlooked herbivorous crab preferentially consumes blades of cordgrass which have been grazed by a fungal-farming snail. Preliminary data shows increased crab grazing in plots with both snails and fungus present, suggesting that crabs, snails, and fungus are synergistically acting together to accelerate widespread marsh die-off.

Session 2D : Humanities / Fine Arts, 286 Reitz

Mozart and the Basset Horn ~ *Keith Northover*
Wolfgang Amadeus Mozart was one of the greatest musical minds to have ever lived. Greatly influenced and inspired by Anton Stadler, a fellow mason and virtuoso, Mozart composed many works utilizing the clarinet-like instrument, the basset horn. This project unearths, catalogues, and reviews all of the complete and fragmentary works Mozart created for the basset horn and basset clarinet. Research was conducted in Salzburg, Vienna, and through various books, articles, scores, and discussions with scholars.

'Damned Dutch': St. Louis Germans in the Civil War Era ~ *Kay Witkiewicz*
The purpose of this presentation is to show how the various political and economic interests of German immigrants to St. Louis led them to support the preservation of the Union during the Civil War. Furthermore, the Republican ideology expressed by state politicians and German social organizations that fostered ethnic cohesiveness were key in eliciting St. Louis Germans' devotion to the Union cause.

Session 2E : Social Sciences, 287 Reitz

Peer Effects in Magnet Schools ~ *Tolulope Bukola*
This paper examines whether the presence of magnet program students affects the performance of non-magnet students in the same school through peer effects. The economic literature indicates that higher-quality peers generally lead to better educational outcomes. Magnet programs accept students from any part of a given district and expose them to a rigorous college preparatory program. The clustering of an above-average group of students in a single school should improve educational outcomes for all students.

Adding Insult To Injury: The Economic Impact of Injuries on Professional Baseball Wages ~ *John Ciotti*
The objective of this study is to measure the differences between what professional baseball players that are injury-prone earn as compared to those who are not injury-prone. This study is significant because it would

determine, when it comes to wage bargaining, if the market is favoring either the players or the clubs, or if it is reaching an accurate determination of an injured player's value with respect to other free agents.

Characteristics of UF Students Interested in Working in Another Country ~ *Erica Trejo*
The purpose of this study is to better understand the unique nature of students who desire cross-cultural interactions through seeking work in another country. This study examined characteristics of UF students with an expressed interest to work outside the US after graduation. The characteristics explored were self-confidence about working abroad, family support and attachment, past cross-cultural experiences, and basic demographic information.

Session 2F : Physical Sciences, 272-273 Reitz

Investigating Stable Structures of a Chameleon Sequence ~ *Mallory Gerace*
Chameleon Sequences are amino acid sequences with the unusual ability to adopt multiple secondary structures. We are investigating two engineered proteins with 88% identical sequences but different native folds. These proteins include a 23 amino acid chameleon sequence. We are interested in understanding why this sequence is able to adopt two distinct secondary structures and how non-local interactions influence its shape. To explore these questions we used molecular dynamic simulations.

Fixing Quantum Field Theories ~ *James Stankowicz*
Quantum field theories mathematically describe the particles and interactions that make up the universe. The mathematical trick of "renormalization" allows calculation of physically meaningful quantities from these otherwise abstract field theories. The theory that exactly describes everything in the universe is unknown, and some candidates for such fields cannot be renormalized, and therefore do not yield testable predictions. A new method of fixing such nonrenormalizable fields is presented.

The Distribution of Gas Densities in the Milky Way ~ *Stefan O'Dougherty*
We study the atomic (HI) and molecular (12CO, 13CO, C18O, HCO+) gas in a 20x6-degree region of the sky probing the Milky Way. We estimate distances to the gas based on radial velocities and a model for the rotation curve of the Galaxy. This allows calculation of mass from the observed column density. We determine the distribution of gas mass as a function of density and compare to theoretical models of the interstellar medium.

Session 2G : Engineering, 276-277 Reitz

Controllability of a Pterosaur-Inspired Aircraft Drone ~ *Ahmed Jorge*
With a vertical tail in the front, the Brazilian pterodactyl, called Tapejara Wellnhoferi, was statically unstable during flight. Nevertheless, the flight characteristics of this bird may prove useful in today's world. The anterior vertical tail that made the bird less stable also made its maneuverability and agility unmatchable This paper analyses the flight dynamics of a model of this pterodactyl and offers possible ways to control this drone. Its combined agility and performance can prove useful when integrated into an unmanned air vehicle.

Surface Instability of Growing Ice Crystals ~ *Gregory Hutchings*
This project examines a past experiment in ice growth in a cylindrical geometry from a different perspective that challenges the earlier results obtained. In the process the key differences between interfacial patterns as seen in planar and cylindrical geometries will be explained. The talk will give a brief explanation of the physics and of the key results that were obtained in a theoretical explanation of the physical experiment.

Spike-Based Chess Program ~ *Scott Lee*
The project goal is to use knowledge of brain computation to design a spike-based cognitive chess program. By creating fundamental building blocks using simple neuron models and neural spike representations, we hope to build a biologically inspired solution to representing chess positions and generating moves that operates in sharp contrast to chess playing programs' standard brute-force methods. We created methods to store a chess board and make moves using spike trains as the sole representation.

Session 2H : Engineering, 278-279 Reitz

Photochemical Reactions of Aqueous Mercury ~ *Amy Borello*
This research aims to focus on the photoreduction of mercury (Hg) in order to decrease its solubility in aqueous solutions. Divalent Hg was reduced to elemental in aqueous systems by certain wavelengths of UV light and volatilized via a purge gas. Altering the UV wavelength and purge gas optimized volatilization for various controlled Hg concentrations. The pH of each system was adjusted in order to determine its effects on the Hg removal rate.

Implementation of the Student Green Energy Fund ~ *Stefan Bird*
In 2007 University of Florida student elections approved a referendum that would invest a small per credit hour fee to fund the reduction of conventional energy consumption on campus. The referendum has evolved into a bill pending in the Florida legislature that would allow all state institutions to establish a "Student Green Energy Fund." My research considers guidelines for what financial model would be most effective and what types of projects should be implemented.

Analysis of Particulate Matter Removal Efficiency Using the STC900 Unit Operation and Process ~ *Karl Seltzer*
The growth of development proportionally increases the amount of impervious surfaces that are unnatural to our surrounding native environments. Not only do these impervious surfaces change the look of the pre-developed areas but, they also alter the hydrologic and pollutant loading found in surface runoff as well as the phase transport of all these pollutants. This increase of pollutants then puts a strain on the receiving water bodies and the animals that live in these effluent ponds and streams. As a result of these changes, many new types of Unit Operations and Processes (UOP's) have been developed that seek to protect these receiving water bodies from high pollutant loadings. For this study, the integrity and efficiency of the STC900 UOP, a hydrodynamic separator, was examined for removal of particulate matter, which carries a large amount of the total pollutant load that is associated with surface runoff.

Session 3 ~ 2:00pm – 2:45pm

Session 3A : Health-Related / Biological Sciences, 282 Reitz

The Presence of Oxalobacter sp. Shows No Statistical Difference in slc26a6 Protein Abundance in the Distal Colon, Proximal Colon, and the Caecum in Colonized and Non-Colonized C57 BL/6 Samples ~ *Shannon Moore*
The purpose of this study was to examine the expression of key transport proteins for the movement of oxalate across the intestinal epithelia. The question was whether the intestinal bacteria Oxalobacter sp. could alter the abundance of these transport proteins. The methods used were protein extraction and Western Blot assays. The results showed that there was no statistically significant difference in the PAT-1 protein abundance in large intestinal epithelia due to the presence of Oxalobacter sp.

A search for genes related to Salicylic Acid, a defense hormone, in Arabidopsis thaliana ~ *Ryan Andrew Carver*
The search for genes related to Salicylic Acid tolerance and synthesis were discovered by the restoration of a specific characteristic that was initially inhibited genetically. Random mutations in specific genes over large populations were sought out. One of which was mapped.

Structural Studies of Minute Virus of Mice (MVM) ~ *Omar Shakeel*
Minute Virus of Mice (MVM) is a single stranded DNA virus. Two strains of MVM (MVMp and MVMi) utilize sialic acid containing glycoprotein for infection. Particularly, MVM recognizes a fucosylated glycan—(SiaLex-Lex-Lex)—in which the Lewis X serves as a common motif found on cancer cells. The purpose of the project is to structurally characterize the interaction of the SiaLex glycan with the viral capsid surface in order to understand host cell recognition mechanisms.

Session 3B : Social Sciences, 284 Reitz

The Impact of Teachers' Unions and School Spending on Test Scores: New Empirical Evidence ~ *Johnathan Lott*
I examine the discrepancy between our high education spending and low test scores and develop a model whereby teachers' unions drive up expenditures while decreasing student performance. I support this model using a regression analysis on spending data and test scores from about 600 of the nation's largest school districts. Utilizing this data, I conclude that these problems can be best alleviated by increasing competition in the worst districts through targeted use of a school voucher program.

The Political Socialization of Israelis: The Impact fo Military Service and Advanced Education on Parent-Child Attitude Transmission ~ *Danielle Feinstein*
This study examines the impact of university experience on the political attitudes of Israeli students. Studies in the U.S. have demonstrated that higher education significantly influences the political opinions of young people, reducing the impact of parental socialization. Unlike their American counterparts, who have not typically served in the military, most young Israelis attend university only after serving in the Israeli Defense Forces. Because of this life trajectory, it is less likely that Israeli college students will be so strongly affected by university experience. By surveying students at the University of Haifa, I hypothesize that military experience will reduce the impact of university experience on political attitudes.

Demand for Microinsurance ~ *Jessica Snyder*
The goal of this research was to discover whether there is a demand by suburban poor in Dar e Salaam, Tanzania for small scale insurance products. This was done by assessing risks faced by potential clients and their current use of financial products.

Session 3C : Biological Sciences, 285 Reitz

Demonstration of Natural Genetic Exchange between Mycoplasma alligatoris and Mycoplasma crocodyli in Vitro ~ *Caitlin S. Leibowitz*

The virulence present in M. alligatoris is thought to be linked to the sialadase gene. Natural horizontal transfer was attempted to link the sialadase gene to the virulence of Mycoplasma alligatoris, which often leads to mortality in alligators, while the closely related species Mycoplasma crocodyli causes only chronic symptoms in crocodiles. The exploration of genetic exchange between the two closely related Mycoplasmas can determine how the sialidase gene imparts virulence to M. alligatoris.

Diet-Dependent Variation in Female Mate Preference in Narnia femorata ~ *Stephanie Gillespie*
Studies of female mate preferences have often assumed that individual females are consistent in their preferences. However, female preferences may vary according to their environment and experiences. This research study examines variation in mating behavior in the cactus bug Narnia femorata as a result of exposure to different nutritional environments. Juvenile N. femorata were reared in environments either containing or lacking cactus fruits, and behavioral trials were conducted to establish how this affected female mate preference. Our results demonstrated that an individual's mate preferences do vary according to its nutritional environment.

Polymeric delivery of siRNA using oligo poly(ethylene glycol) fumarate (OPF) multichannel scaffolds for spinal cord injury ~ *Vaishnavi Purusothaman*
40% of patients with spinal cord injuries lose all neurologic function below the level of injury. Effective strategies for repair must include means to promote axonal regeneration and reduce scar formation. We are developing OPF hydrogel implants for the injured spinal cord that serve as a physical conduit for axons and as a scaffold for cell therapies. Here we attempt to deliver siRNA from the implants to downregulate genes involved in glial scar formation.

Session 3D : Humanities / Fine Arts, 286 Reitz

James Joyce and Emilia Pardo Bazan at the Dawn of Modernity ~ *Christina Iglesias*
Irish writer James Joyce and Galician writer Emilia Pardo Bazan wrote primarily about their native cultures, though the rest of Europe dismissed these societies as backward and intellectually stagnant, especially at the turn of the century. My project analyzed the causes underlying the undeniable correspondences between Galicia and Ireland as well as Joyce and Bazán's perceptions and depictions of the social and intellectual issues plaguing their cultures.

Emperor Claudius's Usurpation and the Republican Revolution of 41 CE ~ *Matthew Chambers*
Generally speaking, the Roman Emperor Claudius is viewed as a harmless scholar-emperor suffering from a myriad of physical disabilities, more interested in the study of history than the politics of his time. By reviewing his relationship with the Julian Dynasty and the actions he took to crush the republican revolution in Rome in 41 CE, I intend to prove that Claudius should be viewed as a usurper, and not a member of the Julian Dynasty.

"To, to, to--": A Study of Exact Repetition ~ *Will Penman*
Repetition in literature has often been studied, but I use a novel approach. Penman's Repetition Finder (PRF) is a computer program I wrote that can scan documents looking for instances of exact, back-to-back repetition. Digital versions of works in the public domain are readily available online. So in a few seconds, whole books can be analyzed. I discuss the implications of this technology on categorizing and understanding the structure and import of repetition.

Session 3E : Social Sciences, 287 Reitz

What makes Honors Organizations tick? A study on resources, strategies and successes ~ *David Roberts*
There are honors programs and colleges all across the country of every size and structure, but they all typically have one thing in common: an honors organization. This study looks at what the typical honors organization looks like and how the successful groups across the country are able to perform at high levels with not only limited material resources but with the limited time resources of their members.

Homelessness in Gainesville: An Ethnography of Illness, Social Network, and Criminalization ~ *Kathryn Ranhorn*
This exploratory study uses ethnography to understand the socio-political context of homelessness and health in Gainesville, Florida. Based on 15 semi-structured interviews conducted at a local homeless clinic, this research describes how illness contributes to and is exacerbated by homelessness in the context of social networks and anti-homeless laws. This study has implications for addressing the underlying causes/consequences of homelessness and developing constructive strategies for homeless advocacy and intervention.

The Children of Rafael Nuñez: Investigating the Role and Impact of Non-Governmental Organizations with Marginalized Children in Colombia ~ *Maria C. Grillo*
This research project examines how the educational programs implemented thus far by two non-governmental organizations working in Colombia - Granitos de Paz (Grains of Peace) and Children Beyond Our Borders (CBOB) – have influenced the educational opportunities and views about the importance of education of the children they serve. The two programs that are analyzed are CBOB's summer educational workshops and Granitos de Paz computer room.

Session 3F : Health-Related, 272-273 Reitz

Prevalence of dyslipidemia in HIV infected children ~ *Amier Ahmad*
The risk for dyslipidemia begins in childhood and may be increased by HIV infection and treatment. The prevalence of abnormal lipid values was determined in an HIV positive pediatric population between 1 to 19 years old. During 1999-2006, 47% of the population had abnormal HDL, 50% abnormal Total Cholesterol, and 43% abnormal non-HDL. During 2005-2006, 50% of the population had abnormal fasting triglycerides, and 47% abnormal fasting LDL.

Correlation between child developmental milestones, oral health and behavior in the Dental Clinic ~ *Kaitlyn Burgess*
Psychological and systemic developments play a significant role in child general behavior. It may also be possible that timing of childhood developmental milestones may relate to oral health and child behavior in the dental clinic. This study analyzed the relationships between these parameters with a behavioral survey and oral chart information. Indications and timing of developmental milestones may be used as a predictor for child oral health and behavior in the dental clinic.

Roles of MicroRNA in the Pathogenesis of Sjogren's Syndrome ~ *Lauren Dupre*
Research was performed to investigate the role of microRNAs in the pathogenesis of Sjogren's Syndrome (SjS), an autoimmune disease resulting in dry eyes and dry mouth, mainly affecting women around the age of fifty. Studies have found that miR-146a and 155 are upregulated in SjS. To investigate the roles of elevated miR-146a and miR-155 in SjS, human monocytes were transfected with mimics and inhibitors to determine their effect on migration of cells and phagocytic activity.

Session 3G : Engineering, 276-277 Reitz

Ionospheric disturbances through Real-Time Data Analysis and Reporting via the Internet ~ *Juan Bij-Kebbe*
To provide real-time access to geophysical observations from remote locations in order to determine whether to attempt to trigger lighting at the International Center for Lightning Research and Testing (ICLRT) at Camp Blanding, Florida. I will implement a real-time "event detector" that will enable the highlighting of possible events on the data charts produced. Together, these programs will greatly improve decision-making at the ICLRT from the perspective of triggering lightning-related ionospheric phenomena.

Canine Anatomic Phantom for Preclinical Dosimetry in Internal Emitter Therapy ~ *Nelia Sanchez-Monreal*
Development of a 3-dimensional computational phantom of a small dog on the basis of whole-body multislice CT data. NURBS surface modeling will be used in order to construct a model of the dog which will aid in the task of explicitly modeling individual animals used in preclinical dosimetry studies

Guidance on the Use of Portal Survey Meters for Radiological Triage ~ *Steven Lambrou*
This project was funded for by the CDC to attain guidance on the use of hand-held survey meters for radiological triage. In the event of an RDD (radiological dispersion device) attack on a wide scale, it would be necessary for first responders to triage victims according to their effective dose. To be able to assess the usefulness of the survey meters, an experimental control was conducting utilizing the ALRADS physical phantoms and common RDD radionuclides.

Session 3H : Social Sciences, 278-279 Reitz

Visual Displays and Consumer Perceptions within the Retailing Environment ~ *Jenny Petrie*
Consumers' immediate perceptions have a dramatic effect on their emotions, which, in turn, influence behaviors responding to window displays within the retail environment. This study utilized a modified version of the Kaplan theory to develop a framework to analyze consumers' levels of understanding and exploration when they approach a visual display, and how these variables ultimately determine their store entrance decisions. The results include traffic counts from a luxury goods retailer and a perceptual survey.

Mobile Mombasa: Female Youth and Communication Technologies on the Coast of Kenya ~ *Chelsea Hansen*
Information and communication technologies play a significant role in much of the developing world including Africa. Furthermore, Africa is currently experiencing what is termed a "youth bulge," resulting in a myriad of cultural productions. This research demonstrates how female youth in Mombasa have incorporated communication technologies into their daily lives in innovative ways thus creating for themselves a space of youth expression.

Racial Differences in the Income Elasticity of Child Mortality in Brazil ~ *Rachele Degraff*
This work focuses on the persisting child mortality gap between the white and Afro-Brazilian populations in Brazil. The question is raised of whether increases in income lessen the probability of child mortality more among whites compared to Afro-Brazilians. Through logistic regression controlling for relevant factors I found that the Afro-Brazilian population does not benefit equally from increases in income and experiences a disadvantage with respect to child mortality.

General Session ~ 2:00-2:45pm

288-291 Reitz

The Value of Undergraduate Research ~ *Curtis D. Byrd, Director of Special Programs and Assistant Director of the McNair Scholars Program*
This session will provide valuable information on undergraduate research programs at the University of Florida and around the country. It will also address the question of "why to conduct research" as an undergraduate. As students prepare of graduate and professional school, it is important to have practical experiences to validate their interests. Research can provide undergraduates a pathway to find their passion and reach their goals in life.

Session 4 ~ 3:00pm – 3:45pm

Session 4A : Health-Related / Biological Sciences, 288-291 Reitz

Metabolic Activity in the Indirect Pathway of the Cortico-Basal Ganglia Circuit in Mink ~ *Shannon Nangle*
Repetitive motor behavior is characterized by stereotypic movements and manipulation of objects and is very common in individuals with autism and related disorders. The purpose of this project was to evaluate the applicability of mink in a model of stereotyped behaviors and test the hypothesis that the development of persistent restricted repetitive behaviors is associated with perturbations in cortico-basal ganglia circuitry. Specifically, the hypothesis is that metabolic activity of the indirect pathway in the basal ganglia is significantly lower in high stereotypic than low stereotypic animals, and whether this is related to housing conditions (i.e. standard vs. enriched). The brains were then sectioned and stained using the cytochrome oxidase technique and analyzed with a densitometer which measured the optical density of each region of interest.

Clinical outcomes of patients with Biliary Atresia at the University of Florida ~ *Anam Ali*
Biliary Atresia (BA) is the most common cause of liver transplantation in children. The goal of this study was to assess the outcomes of patients diagnosed with BA at UF. After performing a retrospective analysis of 82 cases, we found that an early diagnosis (before 75 days of age) and operation were critical, and that long term survival was excellent. 45% of cases eventually required liver transplantation. Our outcomes were similar to national statistics.

The Effects of the Chemotherapeutic Agent Dasatinib on KHT Murine Sarcoma Cells ~ *Megan Lipcsey*
The purpose of this project was to assess the efficacy of the chemotherapeutic agent Dasatinib in the inhibition of growth, cell cycle proliferation, migration and invasion in murine KHT sarcoma cells by inhibiting the phosphorylation of the tyrosine kinase Src and its downstream effector focal adhesion kinase (FAK). In vitro treatment resulted in a dose-dependent decrease in phosphorylated-Src and phosphorylated-FAK accompanied by phenotypic changes demonstrating inhibition of the aforementioned aspects.

Session 4B : Social Sciences, 284 Reitz

Suicide as Political Protest: Vladimir Mayakovsky & the Soviet Regime ~ *Gene Goldmintz*
One of the most talented and controversial poets in Russian history, Vladimir Mayakovsky gave birth to a literary style all his own, quickly rising to prominence under the newly established Soviet regime. A disillusioned intellectual, Mayakovsky shot himself through the heart on April 14, 1930. Investigating the motives behind Mayakovsky's suicide, it will be argued that the failure of the revolution and the onset of the Stalinist counter-revolution drove him to commit such an act.

An integrated global curricula for high school Agriscience classes ~ *Katrina Sharp*
The purpose of this study was to assess high school students' knowledge and attitudes towards international agriculture and increase knowledge in Latin American agriculture. A curriculum was designed and taught to an Agriscience class. Attitude surveys and knowledge tests showed students gained knowledge from the curriculum but did not feel prepared to enter into a globalized workforce. It is recommended that more global elements of agriculture should be included into the current curriculum.

Trepca: Economic Agendas in the 1999 Kosovo War ~ *Laura Bosco*
Few in the international community are familiar with Kosovo's currently dormant but once-abundant mineral wealth. Increasingly, however, it is retroactively suggested that this vast subterranean asset, embodied by the massive Trepca mining conglomerate, played a significant role in the calculations behind if not the discourse of participating actors in the 1999 Kosovo War. These accusations are consistent with a growing body of scholarly literature emphasizing the importance of underlying economic agendas in violent intrastate conflicts and have important implications for Kosovo's political and economic future.

Session 4C : Health-Related, 285 Reitz

Suppressor of superoxide production locus dominantly prevents T1D and maps to Ankrd50 ~ *Meredith Campbell*
Protection of insulin secreting pancreatic beta cells is an approach to prevent and cure type 1 diabetes also known as juvenile diabetes. During the progression of diabetes, free radicals destroy beta cells. I am using experimental models where elevated antioxidant activity, including the enzyme superoxide dismutase (SOD1) is associated with diabetes resistance. My studies will elucidate genetic control of free radical production and elimination as well as how these processes are associated with diabetes.

The association of osteoprotegerin gene variation with ocurrence of bone osteonecrosis of the jaw ~ *Octavio Casanova*
Bone Osteonecrosis of the Jaw (BONJ) is a condition that affects multiple myeloma (MM) patients undergoing oral or intravenous (IV) bisphosphonate (BP) therapy to corect osteoporosis. We hyopthesized that single nucleotide polymorphisms (SNP) in osteoprotegerin (OPG) are associated with BONJ. This study was designed to determine the association of OPG genotypes with occurrence of BONJ. Our data showed that OPG SNP (rs2073618) genotype was significantly associated with BONJ in MM patients treated with IV BP.

Fitness Assessment in Firefighters ~ *Tiffany Cowen*
Cardiovascular Disease (CVD) is the leading cause of on-duty death and disability in firefighters. High aerobic capacity (VO2 max) is a preventive factor for CVD. The purpose of this research is to examine the validity of the field-based aerobic assessment used in the firefighter profession with laboratory-based measures. The results suggest over-estimation of VO2 max. These findings will assist in designing a more practical assessment to reliably reflect the functional fitness levels of firefighters.

Session 4D : Humanities / Fine Arts, 286 Reitz

Socrates on Homer - The Opposing Views of Plato and Xenophon ~ *Nicholas Werner*
My research is on how the two representations of Socrates by Plato and Xenophon differ, specifically when Socrates speaks on the subject of Homeric epic. My project compares and contrasts the two author's Socratic works and relates them to the 5th century pre-Socratic philosophers, Xenophanes and Heraclitus. The paper explores the possible idealism in each author's work and questions the validity of either representations of Socrates.

Narrative Borrowings and Thematic Confluences: The Influence of Melville's Moby-Dick on Faulkner's As I Lay Dying ~ *Sara Stout*
An examination of the works of Herman Melville and William Faulkner reveals that Faulkner's fiction and Modernism may have been directly influenced by Melville and Romanticism. I argue through both biographical and textual research that Melville's manipulation and multiplication of narrative voices in Moby-Dick influenced Faulkner's use of multiple narrators in As I Lay Dying, particularly considering that both narratives focus on death-driven quests. Melville's influence on Faulkner's use of multiple narrative voices makes necessary reconsiderations of the sources of American Modernism.

An Unhappy Knight: Diffusion of Arthurian legend between 500 and 1500 using select texts to illustrate social significance of Mordred ~ *Emerson Storm Fillman Richards*
This thesis examines a basic rout of diffusion of Arthurian legend in Medieval Europe, and the social significance of the character Mordred which is evident in various societal representations of him. Mordred, being the sometimes-son of King Arthur from an incestuous union, was, and still is, used for both secular and ecclesiastic propaganda. The texts examined include: Malory's 'Le Morte d'Arthur', Fordun's 'Chronica gentis scottorum', Monmouth's ' Historia regum britanniae' and Tilbury's "Otia imperialia'.

Session 4E : Humanities / Fine Arts, 287 Reitz

Daring to Question Holiness: Relic Ordeal by Fire in Visigothic Iberia ~ *Mary Lester*
The study of relic ordeals has long been a central component of the history of early medieval Europe, and many historians place the origins of relic ordeals by fire in the tenth century Ottonian Empire, centered in north-central Europe. However, fresh documentary evidence calls this assumed point of origin into question, and indicates that a relic trial by fire occurred in sixth century Iberia in the wake of the Visigothic conversion from Arianism to Catholicism.

Anglian Emblemic Style and its Implications ~ *Benjamin Weissman*
This study is an analysis of influence of Scandinavia on Anglian England in material culture remains, most specifically female dress costume. The emblemic style which these dress accessories demonstrate and the origins of their inception will be attempted to be explained. While migration has been used in the past as an explanation, comparisons will be made between this influence and the influence which Rome and Byzantine placed on boundary cultures during their political height in order to create an alternative hypothesis.

'At Home and Abroad': Scottish Presbyterian Missionaries in the British Empire ~ *Russell McMullen*
In the nineteenth century the British Empire was changing. A new imperial energy began to emanate from middle-class Britons who increasingly professed evangelical brands of Protestantism. The idea that the Empire could be the vehicle that took the light of Christianity and British civilization to spiritually and culturally dark 'heathen' populations became a powerful justifying force for imperially-minded Britons. The Scottish Presbyterian missionaries that participated in this 'civilizing project' represented Scotland's claim to moral legitimacy and proved that the Empire was indeed a British one and not just English.

Session 4F : Biological Sciences, 272-273 Reitz

Multiple predator effects on a non-native fish ~ *Theresa Floyd*
Multiple predators can have non-additive effects on prey, especially when there is intraguild predation. I tested two native predatory fish, largemouth bass Micropterus salmoides and eastern mosquitofish Gambusia holbrooki, with a non-native prey species, swordtail Xiphophorus hellerii. I found opposing non-additive effects, facilitation of bass or interference of mosquitofish, influenced by structurally complex predation refuges within the experimental habitat. Bass and mosquitofish can act synergistically to strongly resist the invasion of small-bodied fishes.

Migration of Tumor Initiating Cells and Brain Tumor Recurrence ~ *Bugra Tugertimur*
Malignant brain tumors, particularly glioblastoma multiforme (GBM), account for more than 16,000 deaths per year throughout the US. GBM is resilient to treatment and has a high rate of recurrence attributable to a migratory stem cell population that is resistant to chemotherapy. These tumor-initiating stem cells (TISCs) are believed to be essential in eliminating recurrence of GBM. Identification of signaling pathways governing migration of TISCs may lead to new therapeutic avenues.

Session 4G : Engineering, 276-277 Reitz

Opto-Mechanical Transduction in a Microelectromechanical Systems (MEMS)-based Optical Pressure Transducer for High Temperature Applications ~ *Chase S. Coffman*
The emergence of precision laser micromachining has provided a conduit through which robust, micro-scale fiber optic sensors can be realized. A test platform has been developed to investigate the sensitivity characteristics and dynamic range of the opto-mechanical transduction mechanism governing the performance of a sapphire-based fiber optic lever pressure transducer. Such a sensor is of significant interest for its ability to withstand the harsh environments characteristic of hypersonic flows and combustion regions.

Electromechanical Helmholtz Resonator ~ *David Guerra*
Acoustic liners are lined inside turbo jet engines to reduce noise. They provide complex impedance boundary layers that alter the sound inside the nacelle. They are essentially Helmholtz resonators that are

constrained, for a given geometry, to a fixed impedance. An electromechanical Helmholtz resonator (EMHR) can be used to adjust its acoustic impedance by altering the vibrations in an electrical network. A tuning range that would reduce the acoustic signature over several flight conditions of the engine is optimal.

Multiple signals over a digital communications link ~ *Jason Larkin*
This project outlines an implementation of sending four orthogonal waveforms concurrently over the same channel. These waveforms are used to enable cell phones and other forms of multiple channel communications. The goal was to design a simple physical channel to transmit four orthogonal signals simultaneously, and to use this setup to send four signals developed by the Spectral Analysis Laboratory.

Session 4H : Engineering, 278-279 Reitz

Cell Starvation ~ *Justin Lichter*
It has been reported that the infrastructure of a cell might govern certain types of sub-cellular particle transport throughout the intracellular region of the cell. The architecture of the intracellular region is composed of the cytoskeletal filamentous proteins including actin, microtubules and intermediate filaments. This study aims to develop a standard protocol that will minimize the actin structure found in Swiss 3T3 fibroblasts by forcing the cells to remain in the G0-G1 phase through inducing tissue culture starvation.

Effect of Landfill Characteristics on Dissolved Organic Matter Properties and Coagulation Treatability ~ *Sarah Comstock*
Leachate from municipal solid waste landfills is concentrated with pollutants, including non-biodegradable organic matter. This study is a comprehensive evaluation of landfill characteristics, leachate properties, and coagulation treatment conditions. A total of seven leachate samples were collected from four landfills. The leachate samples were coagulated using three metal salts. The results emphasize the importance of organic matter properties on leachate treatment, and apply knowledge from different fields, such as water treatment and solid waste management.

2-Glove Human Interface for Computers ~ *Reinier Santos*
This research aims to design a human interface device (HID) for computers, an innovation of the mouse and keyboard. The design consists of a pair of wireless gloves that can translate hand gestures into input that a computer can understand. This research encompasses USB Interfacing, writing a driver for an HID compliant device, high resolution analog to digital conversion and sensors, multiple wireless device communication, and writing packets that are HID compliant. Among these five areas, USB interfacing and the concept of HID compliant devices have not been encountered by the member so dynamic research is much required.

Poster Presentation Descriptions

Rion Ballroom

Session 1 ~ 10:45am – 11:30am

Biological Sciences

1. Uptake of nanoparticles in fish via gavage ~ *Alexandra Chachkevitch*
Researchers have shown that nanoparticles, very small particles that are found in polluted water, can be toxic when they enter the bodies of fish. This experiment's hypothesis was that nanoparticles can get through the digestive tract of the fish into its blood stream, bind to the fish egg yolk protein and end up in the eggs and other tissues. By running tests on nanoparticle-plasma mixes and gavaging the fish I tried to support/disprove the hypothesis.

2. Effects of Dietary Zinc on Intestinal Microbiota ~ *Amanda Shore*
Few studies have investigated zinc status on intestinal microbiota populations. CD-1 mice were fed a zinc adequate (10 mg/kg) or a zinc deficient (<1 mg /kg) diet for 4 weeks. Transcript levels of colonic metallothionein and zinc transporter (Zip4) were measured by qRT-PCR as markers of zinc status. Zinc deficient mice experienced no weight loss normally associated with zinc deficiency. Denaturing gradient gel electrophoresis (DGGE) analysis indicated that intestinal microbiota profiles differed with zinc deficiency.

3. Paracrine responses to hyperthermia: do cells warn their neighbors about environmental stress? ~ *Angelika K Linowski*
We hypothesize that cells exposed to stress produce paracrine signals released into the extracellular fluid that warn surrounding cells. As a result, "warned cells" promote their own survival by reducing metabolic rate, a form of "hibernation." To test this hypothesis, we used O2 polarography to measure metabolic rate in HeLa cells and mouse C2C12 cells. Control cells were maintained at 37°C (37T) and hyperthermic cells at 42°C for 45 min (42T). Both groups (37T and 42T) and their incubation media (37M and 42M) were separated after treatment by centrifugation. O2 consumption was then measured in each group at 37°C in the presence of the newly exchanged media, i.e. the new "respiratory buffer" (37T-37M, 37T-42M, 42C-37M and 42C-42M). Results indicate a reduction in the cell respiration of HeLa cells previously exposed to 42°C (42T-42M) compared to their matched cells at 37°C (37T-37M). There was also a decrease in metabolic rate of 37T cells exposed to media from cells treated at 42°C (37T-42M vs. 37C-37M) ($P<0.02$). Cells treated at 42°C and then exposed to 37M showed recovery of respiratory rate (42T-37M vs. 42C-42M). Similar, though less consistent responses were seen in C2C12 cells (< 0.01). We conclude that paracrine signaling from heated cells reduces the metabolic rate of surrounding cells. This may function to improve survival of neighboring cells in response to local environmental stress.

4. Using Retroviral Vectors to Fate-Map Sclerotome Resegmentation and Over-Express TMEM16A During Avian Embryogenesis ~ *Bradley Bruggeman*
We are undertaking two projects employing avian retroviral vectors to investigate aspects of vertebrate development. One uses a replication-incompetent virus, RISAP, to assay which cell population in the sclerotome forms the intervertebral disc. Understanding how the discs form can shed light on the processes which cause disc degeneration in humans. The second project employs RCAS to over-express TMEM16A, a calcium-activated chloride channel that may play a key role in cystic fibrosis and smooth muscle disorders.

5. The Possibility of Hybridization between Terpsiphone viridis and Terpsiphone rufiventer ~ *Caitlin Wildes*

Male paradise flycatchers (Terpsiphone spp.) are often found that incorporate morphological features of both T. viridis and T. rufiventer leading to hypotheses of hybridization. However, this variation could also be caused by natural plumage variation. I hypothesize that T. viridis and T. rufiventer are hybridizing, resulting in these intermediate forms. To test this, I used DNA techniques (microsatellite genotyping and nuclear sequences) to identify individuals that might be the result of hybridization.

6. Signal detection in the leaf-footed cactus bugs, Chelinidea vittiger, and its implications with landscape connectivity ~ *Christopher W. Maxwell, Jr.*
The alteration of habitats by both natural events and humans are causing dramatic changes in the global environment. Thus, in order to recognize the implications of these changes, we must understand how animals acquire and use information in decision making. This study investigated signal detection capabilities of the cactus bug, Chelinidea vittiger. The perceptual range of the insect was determined to lie between one and two meters, with no directional effect of wind.

7. The K+-Cl- Cotransport Maintains Tissue O2 Delivery During Alkalosis ~ *Courtney Kagan*
If hemoglobin are exposed to blood alkalosis their oxygen affinity is increased causing problems with O2 delivery to tissues. Marine organism must regulate red blood cells' (RBCs) intracellular pH to prevent this. This study proposes that the K+-Cl- cotransport (KCC) is involved in this process. Our experiment showed an increase in hemoglobin oxygen affinity in RBCs with inhibited KCCs. It was found that the KCC has a role in maintaining the intracellular pH of RBCs.

8. Winter Thermal Ecology of the Florida Snapping Turtle (Chelydra serpentina osceola) in a North Florida Spring-Fed Blackwater Stream ~ *Eric Suarez*
The common snapping turtle (Chelydra serpentina) has been well-studied in the northern part of its range, but little work has been done in the southern part of its range. The Santa Fe River in north-central Florida exhibits seasonal temperature fluctuations, but is fed by dozens of thermally stable springs. My question is "How do adult Florida snapping turtles (Chelydra serpentina osceola) thermoregulate throughout the year in this thermally variable spring-fed blackwater stream?" My null hypothesis is that the turtles use the springs and the river equally throughout the year.

9. Immunoblot analysis of Caspase-8 in Methamphetamine-induced Apoptosis ~ *Prashanth Shanmugham*
Methamphetamine is a psychostimulant that can cause cognitive and psychomotor impairments in drug abusers. Earlier studies have shown that METH can cause neuronal apoptosis in the frontal cortex of CD1 mice. In this study, we used ICR mice that were treated with METH (4 x 10 mg/kg) and examined the role of receptor-mediated apoptosis in the frontal cortex. TUNEL staining identified apoptotic cells at 24 hr after METH treatment. Immunoblot analysis was used to determine Caspase-8 expression, at various time points (2 hr-4 hr-8 hr-1 day-3 days-7-days) after METH injections. Immunoblot analysis showed that Caspase-8 expression peaked at 3 days after METH administration in the frontal cortex. This shows that receptor mediated apoptosis occurs in the frontal cortical region of ICR mice after toxic regimen of METH.

10. Mitochondrial Open Reading Frames and Pollen Sterility in Maize ~ *Yong Tan*
Cytoplasmic male sterility (CMS), the maternally inherited failure to produce functional pollen, results from mitochondrial signaling pathways leading to degeneration of male reproductive organs. Most CMS genes are mitochondrial open reading frames (orfs). Co-transcribed orfs predicting proteins of 355 and 77 amino acids are associated with CMS type S (CMS-S) in maize. The objective of this research is to identify the mitochondrial gene responsible for CMS-S pollen collapse.

Design, Construction, and Planning

11. Soundscapes and Sacred Spaces: Bali, Indonesia ~ *Matthew Meyer*
The landscape is largely a visual field, often serving to identify a culture's sense of place. Yet landscapes are experienced in more ways than simply seeing. Humans experience landscapes as a space that envelops their being. They move through them and feel the climatic effects of the spaces within it. They also hear landscapes. This study attempts to represent landscapes, specifically, a sampling of sacred spaces on the island of Bali.

12. Re-Designing Place in post-Disaster Earthquakes ~ *Marcy Monroe*
Over the past few years the world has seen a dramatic increase in natural disasters. My research has been directed specifically towards earthquakes and the reconstruction process of Peru and Sichuan China after those events. It became clear that the main cause of death was from collapsed structures or fallen debris. The intent behind the research is to develop a structurally sound and economically efficient construction technique located in Pisco Peru.

Engineering

13. Fabrication and characterization of carbon-based nanomaterials ~ *Alan Teran*
Carbon nanotubes and graphene films are members of the fullerene family, structures that are purely made out of carbon atoms. The goal of the project is to fabricate carbon nanotube and graphene based films and measure their electrical properties. This involves developing microfabrication methods to transfer graphene sheets and carbon nanotubes onto silicon-based substrates, pattern electrodes on them using photolithography and metal evaporation. It also involves measuring their properties using a semiconductor parameter analyzer.

14. Hydrothermal Synthesis of a Layered Lithium-Ion Battery Cathode Material ~ *Alex Emly*
As the world continues its efforts to "go green," transportation still remains one of the biggest obstacles to overcome in reducing carbon emissions. Research on lithium batteries is incredibly promising for the use in hybrid vehicles. However, current synthesis procedures for lithium-ion battery materials dictate high operating temperatures of 1000oC. Hydrothermal synthesis utilizes high pressures in combination with pH adjustment of the solvent in order to drastically reduce these heat treatment temperatures.

15. Evaluation of Appropriate Source Strength Functions Based on Historical Field Data Sets ~ *Brandon Wood*
Dense non-aqueous phase liquids (DNAPLs), a contaminant classification, pose significant challenges in groundwater remediation and prediction of contaminant fate. Previous research suggests that flux based analysis may relate contaminant source zone behavior to plume evolution and improve risk analysis. Several mathematical models have been developed to relate DNAPL spatial distribution to mass flux leaving source zones. These functions were coupled with plume evolution models to assess applicability to field settings using historical field data sets.

16. Development and Biomimetic Mineralization of Collagen Films ~ *Chelsea Catania*
Collagen materials are of interest for bone healing due to their biocompatibility, biodegradability, low immunogenicity and ability for cell adhesion and proliferation. In this work, collagen gels were created through fibrillogenesis and compressed to form films which were then subsequently cross-linked. These collagen films were then mineralized with hydroxyapatite using a polymer-induced liquid-precursor (PILP) mineralization process to achieve bone-like morphology. The long term goal of this work is to laminate several mineralized films to create a dense HA/collagen scaffold mimicking both the microstructure and mechanical properties of lamellar bone.

17. Factors affecting iron mobilization in surface and groundwater sites near Florida landfills ~ *Christine Valcarce*
A high concentration of iron is a concern for public welfare and ecosystem vitality. The project focused on characterizing the role of biotic and abiotic factors in mobilizing iron in the soil under different landfill leachate conditions. Batch tests revealed that biological activity produced the highest elevation of iron. However, even a minor chemical disequilibrium was enough to bring the level of iron past secondary drinking water standards.

18. Estimation of Annual U.S. Methane Emissions from Construction and Demolition (C&D) Landfills using Biochemical Methane Potential (BMP) ~ *Gabriel Maul*
This research aimed to estimate the methane emission potential from construction and demolition (C&D) landfills in the United States using the biochemical methane potential (BMP) assay of six different types of biodegradable materials prevalent in the waste stream. Combining BMP results with four different sample

C&D waste compositions, an average value of 5.9 m3 CH4/Mg of C&D waste was determined. Applied uniformly over all U.S. C&D waste disposed, annual U.S. methane emissions were estimated to be 7.8 Tg CO2 equivalent/year.

19. Development of Vascular Occlusion Device for Portosystemic Shunts in Cats and Dogs ~ *Jessica Wooden*
A portosystemic shunt (PSS) is a condition in which an anomalous vein bypasses the portal and drains directly into the systemic venous system. This causes a number of problems on cats and dogs. Current treatments give diverse occlusion rates of the anomalous vein. In an attempt to have a more uniform occlusion rates I will work with silicone and a hydrogel polymer to create a new device.

20. Autonomous Mobile Light Sensing using Wireless Sensor Motes ~ *Lars Vala*
Wireless Sensor Networks are clusters of autonomous devices, equipped with sensors, small radios and limited processor capabilities. Used for environmental monitoring, they hold promise in a wide array of applications such as health care, public safety, 'smart home' appliance integration and ecological field research. This project has been an exploration into the programming interface, platform and a specific application of the technology in light-monitoring, where the sensor motes are used to gauge varying light intensity in a room.

21. Effect of Polymer Coated Needles On Infusate Backflow During Convection-enhanced Delivery ~ *Louis C. Vazquez*
In this study, an attempt to prevent or impede the reflux, or backflow, of infusate that occurs during convection-enhanced delivery was made by applying thin, bioacceptable, polymer coatings to stainless steel needles prior to insertion. These polymers hydrate and swell up within tissue, creating an annular barrier for backflow along the outside track of the needle that leads to a higher drug concentration throughout the targeted area and a more efficient delivery.

22. Is Wind Power A Viable Energy Option for America's Future? ~ *Michael Garitty*
My research is on wind power and the potential as a future renewable energy source. Due to the high costs, the low costs of fossil fuels, and the ongoing Global Warming debate, there is plenty of speculation about the amount of money spent to fund Wind power technology. The goal of the research is to consider the pros and cons of such technology.

23. Crop modelling of Arabidopsis ~ *Paul Heyliger-Fonseca*
Genotypic traits can be observed and measured quantitatively through their respective phenotypic expression. However, for plants, there are large gaps in our understanding of the interactions of genes with phenotypes particularly for different environments. One way to understand phenotypic responses of plants to different environments is through crop models. Crop models have been around for decades and are used extensively due to their efficiency in predicting complex traits such as yield (Jones et al., 2003). Although many plants have been used in these models, Arabidopsis thaliana, the model plant, has not been integrated into crop models. Since the genome of Arabidopsis has been sequenced it is an excellent system to link genes with genotype specific coefficients used in crop models. Therefore, for this project, I am collecting physiological data required to develop an Arabidopsis crop model for CROPGRO (DSSAT v4.5; Jones et al., 2003).

24. Speech Recognition Software ~ *Prashant Kansakar*
I will be presenting results of experiments with speech recognition software. The experiment involves testing software from different vendors. I will have examined the accuracy of these different software applications. And together with consideration of prices, I will have determined the most suitable software for use with robots in the Machine Intelligence Lab.

25. Doped Phospho-Olivines for Advanced High Capacity Lithium Ion Batteries ~ *Thomas McGilvray*
This study looks at the effects of aluminum doping on the performance of LiFePO4 (lithium iron phosphate) battery cathode material. We attempt to explain the mechanism by which doping improves cathode performance. We study electrochemical effects by producing batteries with doped and undoped

LiFePO4 as the cathode material and comparing their performance. In order to examine the material's crystal structure, this study utilizes intermittent X-ray diffraction (XRD).

26. The orbits of two rods sedimenting in a viscous fluid ~ *Tim Phan*
Depending upon the initial positions of the two rods, they can perform periodic orbits while falling through the fluid. Those orbits, or repetitive trajectories, can consist of a series of relative changes in orientation and center-of-mass positions of the rods. Three such orbits, previously unknown, have been identified using low-level modeling. This research is to simulate the orbits of two rods sedimenting in a viscous fluid in order to confirm the existence of the orbits.

27. Identifying NAP positive genes utilizing a FISH probe ~ *Vlad Pascu*
My research team and I have been working to redesign the molecular probe that a former student created. We have found some mistakes in the FISH probe that yielded false positives. We have been trying to separate the DNA from the nucleus and then running it through PCR with the primers that are supposed to cut the NAP gene. Afterwards applying the result on gel electrophoresis to see if you have the correct length for NAP.

Health-Related

28. PDX1, a Molecular Target for Treatment of Human Pancreatic Cancer-Screen PDX1 Inhibitors from Small Molecules ~ *Alexandra Ayache*
Pancreatic ductal adenocarcinomas expressing the transcriptional factor Pdx1 are highly aggressive and resistant to chemotherapy. Therefore, molecules that selectively bind and inhibit Pdx1 may provide effective treatment. Using computer modeling we have screened 250,000 small molecular compounds from the National Institute of Cancer to select molecules predicted to bind Pdx1. We are screening these molecules using trasfection assays to determine if any can inhibit the biological function of Pdx1 for future use as clinical therapy.

29. A Preliminary Comparison of Sound Quality of Maternal Speech Recordings in Varied Neonatal Intensive Care Unit Settings ~ *Andi Petito*
Sound levels in the NICU frequently expose preterm infants to higher intensities and frequencies compared to what they naturally encounter in the womb. The long term auditory effects of these elevated sound levels is actively under investigation. The purpose of this study is to compare the original sound spectrum of a maternal speech recording to spectra obtained within typical NICU settings. We will document how the frequency and intensity of the recording are altered.

30. The Effect of a Novel Small Molecule on FAK and IGF-1R ~ *Audrey Cox*
Function and Esophageal Cancer Survival Esophageal cancer is associated with a 15% long term survival. Focal adhesion kinase (FAK) and insulin-like growth factor receptor-1 (IGF-1R) are proteins that synergistically interact together to help promote the aggressive, malignant behavior of esophageal cancer. My laboratory studies are evaluating: 1) the effects of a novel small molecule compound to decrease the interaction of FAK and IGF-1R and inhibit their function 2) the compound's ability to decrease the viability of esophageal cancer cells.

31. Phonological Awareness of English in Bilingual Adults ~ *Denise Magdales*
The present study examined the phonological awareness of English in bilingual and monolingual college students. Three groups (26 monolinguals, 21 simultaneous Spanish-English bilinguals, and 13 sequential Tagalog-English bilinguals) were tested on a battery of tests including experimental tasks targeting Pig Latin and Rapid Automatized Naming, plus several subtests of The Comprehensive Test of Phonological Processing (CTOPP), and a variety of executive function and working memory tasks. It was predicted that bilingual speakers would exhibit an advantage in all tasks targeting phonological awareness.

32. Regulation of Bone Resorption by Isoforms of OSCAR ~ *Erin Talbot*
The osteoclast-associated immunoglobin-like receptor (OSCAR) gene has two isoforms. OSCAR-s, the secreted form and OSCAR-m, the membrane bound form of the receptor. Binding of ligand to the membrane bound receptor leads to bone resorption. OSCAR-s may serve as a decoy receptor to OSCAR-m,

and thus inhibit bone resorption by osteoclasts. The human body could regulate bone resorption in disorders such as periodontal disease or rheumatoid arthritis by producing appropriate levels of OSCAR-s.

33. Cultural Weight Loss Differences in Older African American and Caucasian Women ~ *Jessica Deslauriers*
The purpose of this experiment is to promote weight loss among older Caucasian and African American women through diet and exercise. The researcher hypothesizes that the intervention group will lose more weight than the control group and cultural differences will be observed. 18 African American and 16 Caucasian women were randomly assigned to intervention or control conditions. Diet and exercise greatly promoted weight loss. African American women lost more weight than Caucasian women, on average.

34. A Distinctively Designed Extrinsic Ocular Musculature In the Florida Manatee ~ *Kelin Maciejewski*
This study examines the gross anatomy and musculature in the eye of the Florida manatee. Specimens were collected from the Marine mammal Pathobiology Laboratory in St. Petersburg, Fl and were stored in 10% buffered formalin. Specimens were embedded in paraffin, sectioned, stained, and photographed. Evidence reveals that these extrinsic ocular muscles are unlike any muscles in mammals. Reduced eye size provides evidence that vision has been altered due to changes in the extrinsic ocular muscles.

35. Intensity of Rehabilitation Post Neurologic Injury: A Comparison of Therapy Across Rehabilitation Environments ~ *Laura Rogozinski*
Basic and translational studies support repetitive, task-specific practice to maximize motor learning and performance. Rehabilitation of walking for individuals post stroke (PS) now incorporates locomotor training (LT) to optimize recovery rather than traditional gait interventions (TGI) that focus on compensations. It is unknown how these interventions differ regarding the intensity (e.g. repetitions, speed, bouts) and number of repetitions of task-specific practice. This observational study compares the intensity and task-specific repetition afforded by TGI and LT for individuals PS. The results will inform best practice for walking rehabilitation.

36. Structure Based Discovery of Novel Interleukin-8 Inhibitors ~ *Lauren A. Johnston*
Interleukin-8 (IL-8) signaling has been shown to be involved in cancer cell proliferation, tumor angiogenesis and metastasis. The goal of this study is to develop novel therapeutic approaches to treat cancer. We solved the structure of IL-8 to high resolution (0.95 Å) and used it as a basis for selection of drug-like small molecules. We are evaluating the utility of these drug candidates in cell migration assays using breast, colon and pancreatic cancer cell lines.

37. Sudden Speechlessness ~ *Maureen Connelly*
The purpose of this research was to identify whether symbols and messages identified as helpful by English proficient suddenly speechless patients (unable to verbalize as a result of head or neck surgery or trauma, intubation) are representative of the communcation needs experienced by Hispanic subjects. Ten participants responded to a simulated speechlessness event by matching pictoral images to verbal messages. Descriptive statistics were used to synthesize data regarding the communication needs and symbols identified by participants.

38. Tear film analysis and localization of immunglobulin g within the tear producing apparatuses in the Florida manatee, trichechus manatus latirostris ~ *Michael Eichner*
The Florida manatee demonstrates remarkable healing capabilities and is hypothesized to possess a strong immune system; the true extent currently remains unknown. For this study, mouse anti-manatee IgG was used to establish the presence of this class of immunoglobulin in lymphoid tissues with an emphasis on those associated with mucosal immunity. Immunohistochemistry and localization of IgG was examined in regards to activity associated with varied causes of death. With further development of this project's analysis protocols, it is hoped that tear film evaluations will be a quick and non-invasive method to evaluate the mucosal immune response of the Florida manatee.

39. Early Detection of Oral Cancer in Rural Hispanic Farmworkers ~ *Paola Ferst*

In 2008 approximately 35, 000 people in the U.S. were newly diagnosed with oral cancer. There are significant oral cancer disparities among minority populations. This project explored the knowledge, attitudes, and care-related behaviors toward oral health, preventative behaviors, and oral cancer risk factor knowledge among a rural Hispanic population. Focus group findings helped develop the survey used to collect data. Research findings suggest a need to provide health services to this population including culturally appropriate educational material and oral cancer screenings.

40. Investigation of Dichloroacetic Acid Breakdown in the Mitochondria ~ *Sarah McKenzie*
Dichloroacetic acid (DCA) is used to treat mitochondrial disorders. DCA breaks down into glyoxylate in the presence GSTz enzyme. DCA is present in cytosol and mitochondria. However, mitochondrial catabolism has yet to be heavily researched. Since it is used to combat mitochondria disorders, the breakdown of DCA in the mitochondria was explored. Results led to knowledge about how to improve procedural techniques with protein purification, and further research on DCA breakdown in the mitochondria is ongoing.

41. Neurotrophins induced Migration of Multipotent Astrocytic stem cells ~ *Thu-Cuc Nguyen*
Hypoxic-ischemic encephalopathy (HIE) affects 2% of term neonates and the resulting brain injury takes place via cellular necrosis and apoptosis. Our laboratory has demonstrated that Multipotent Astrocytic Stem Cells (MASCs) transplanted into a neonatal rat model of HI migrated to the injured regions of the cortex and hippocampus and once there differentiated into astrocytes and neurons. We hypothesized that Neurotrophins, a family of growth factors, enhance the in vitro migration of Multipotent Astrocytic Stem cells.

Humanities and Fine Arts

42. The Lilong Tower: Shanghai, China ~ *Amanda Texas*
While studying abroad, I was able to experience cultural submergence and discover the cultural, historical, and social aspects of Shanghai, China. Gathered research and case studies were applied in the conceptual and theoretical design of the Lilong Tower. Focusing on the historic urban fabric of Shanghai, the fabric is reworked to transition from a horizontal to a vertical design that was developed as a proposal to promote the blending of social classes and community growth.

43. Design For Development: A case study of Pixan and organic farming ~ *Laila Simonovsky*
With Professor Maria Rogal as my mentor, I worked directly with organic farmer Gualberto Casanova Mezeta, from an indigenous Maya community in Quintana Roo, Mexico, to develop a communication strategy and design materials to enable him to sell, using fair-trade practices, his organic produce. Working on this project allowed me to explore how to conduct design research with communities and use design as a key component for the development of local economies and to empower people through communication.

44. Men who dance: an Ethnographic Study of male professional insertion in the dance scene in the city of Salvador, Bahia, Brazil ~ *Morena Sampaio Maia de Almeida*
This project aims to develop a qualitative analysis of the insertion of males in the professional dance scene in the city of Salvador, Bahia, Brazil. This research is an exploration of the challenges of the inclusion process of males in the art of dance, their development as professionals, and how they survive as dancers in a society with strong issues of prejudice (racial, homosexual and artistic) and lack of recognition and depreciation regarding the arts.

Physical Sciences

45. Enzymatic Asymmetric Reduction of Fluorinated Alkenes ~ *Adam Rothman*
Our goal is to reduce fluorinated alkenes using enzymes to the corresponding alkanes with high stereoselectivities. The optically pure fluorinated products can serve as potential building blocks for the pharmaceutical industry. The ester (E)-ethyl 2-fluoro-3-phenylacrylate was successfully reduced asymmetrically by six enzymes, with forty-eight hour conversion rates ranging from 9.7% to 67.7%. In future research, we will synthesize other substituted vinyl fluorides to be used as substrates for our library of enzymes.

Social Sciences

46. Development of a novel measure of pediatric obsessive-compulsive impairment and emotional distress ~ *Adam Reid*
The purpose of this study is to develop a new, short assessment of childhood OCD severity in a clinical sample of children diagnosed with OCD. The majority of current childhood OCD measures are lengthy and often ask children difficult questions about their symptoms. This new measure will allow clinicians to quickly assess the emotional distress and impairment caused by a child's OCD by having the parent answer only eight questions about their child's symptoms.

47. Effect of Teaching Suprasegmentals on Second Language Learning Motivation ~ *Amy Joseph*
This study examined the effect of explicitly teaching sentence level stress placement on three aspects of language-learning: 1) students' motivation, 2) how much students think they sound like native speakers and 3) how much native speakers think the students sound like native speakers.). In conducting the experiment, two groups of beginner English students received the same instruction, except that the test group had an added emphasis on sentence level stress placement.

48. An Ethnographic Study of the American Fat-Admiring Community ~ *Ashley Valdes*
This research seeks to obtain a basic understanding of an American sexual subculture: the Fat Admirer/Big Beautiful Woman (FA/BBW) community. Members of this community are sexually attracted to overweight and obese partners. This research uses interviews gathered over a three-day convention to examine terminology used by the group, ties to the Fat Acceptance and Health at Every Size movements, and issues in dealing with the medical community.

49. Heterosexual Perceptions of Homosexuality in the context of Ethnic In-Groups and Out-Groups ~ *Caitlin Lewis*
This research investigates heterosexual men's perceptions of homosexual men representing different ethnicities (e.g., white versus Hispanic), assessing the effect of different masculinity levels on these reactions using a new "hot sauce" measurement method. This research expands upon a 2007 University of Florida senior thesis project as well as utilizes unpublished research data from a 2008-2009 University of Florida study to further assess the levels of misperception, aggression, and prejudice against homosexual males by heterosexual males.

50. Community Food Security: An Analysis of Geographic and Economic Predictors of Fresh Food Accessibility, Availability and Affordability in Gainesville, Florida ~ *Carlye Gates*
I evaluate the accessibility, availability and affordability of fresh fruits and vegetables in Gainesville Florida using geographic and economic indicators. By analyzing the relationships between income level, residential location, food variety and cost, I demonstrate how the allocation of this basic resource can be used as a measure of the area's food security. As part of a larger community food assessment, my research combines data collection and analysis with information gathered using a community-based, participatory process. Ultimately, I suggest that both residential location and income level are strong predictors of the accessibility, availability and affordability of fresh food in Gainesville, Florida.

51. Study of goal setting and achievement training effectiveness ~ *Christopher Adalio*
Many believe they know how to accomplish their goals, yet they often fail to follow through. Thus, it may be necessary to train leaders in goal setting and achievement strategies. Leaders of the Boy Scouts of America participated in a six month goal setting and achievement intervention in which they were asked to document their goals. Based on the results, it may be beneficial for leaders to participate in goal setting and achievement trainings.

52. Domestic Dogs of the Ancient Maya ~ *Elizabeth Olson*
The presence of Canis familiaris in the ancient Maya record is ubiquitous yet, the societal role that these domesticated animals played remains a mystery. This study takes a close look at the significance of the dog in ancient Maya society by coupling historical information with dog paleodiet data via bone isotopic

signatures and dog breed morphology using zooarchaeological techniques. The results of this study provide new insight into the role of the ancient Maya dog.

53. Exploring Consumer Decision Making in Reference to Sustainable Products ~ *Gia Nardini*
This research involves examining the affects of social and environmental appeals on consumers' decision to buy sustainable products. The purpose of this research was to show that a relationship between social and environmental appeals exists. Participants were given advertisements with varying levels of social and environmental information, and were then surveyed about their feelings toward the product in the advertisement. The results of this study can be used to better understand how to market sustainable products.

54. Cross-Cultural Mentoring Among Women ~ *Heather Pate*
The purpose of this study was to better understand how woman from two different cultures view intergenerational mentoring relationships. Five adult women and six adolescent women were interviewed from the Philippines and United States. The interview examined the development of the intergenerational relationship, the quality of the intergenerational relationships, and the cultural beliefs about intergenerational relationships. Results showed that there were more similarities than differences in intergenerational relationships between the two cultures.

55. Riparian Rule in Florida and Georgia's Waterways: How a dated system is exhibiting signs of stress ~ *Jasmine Betz*
Divergence in the interpretation of riparian rule between the states could hinder water rights negotiations between states as with the decades of litigation surrounding the Apalachicola-Chattahoochee-Flint dispute between Florida and Georgia. In the following article, the differences between Florida and Georgia's riparian rule are assessed via analysis of significant court rulings, law reviews and news publications. Additionally, areas of divergence that warrant remedy to ease future interstate water relations are identified.

56. An Analysis of the Relationship between Bank Performance and Executive Compensation ~ *Katherine Kasser*
This research evaluates relationships between executive pay and financial performance in 16 large banks. Methodology: This study uses regression analysis and SEC filings for the top executives for 2006-2008 to determine if there are correlations between compensation and bank performance. The analysis focuses on the percentage change in compensation for the 3 year period compared to the change in several performance metrics.
Results: Results show statistically significant correlations between equity awards and return on assets, total cash compensation and return on assets, and total cash compensation and return on equity.

57. Viability of Funds of Hedge Funds in a Portable Alpha Portfolio ~ *Michael Biemann*
This research explores the use of funds of hedge funds in portable alpha portfolios. It compares historical hedge fund strategy returns from different time periods and economic climates against the returns of common beta exposures in a portable alpha context. From this, one can determine when and which (if any) hedge fund strategies can claim to be a valuable addition to a portable alpha portfolio.

58. Jury Decision Making in a Drunk Driving Murder Case ~ *Mitchell Cooper*
My research investigates juror decision making in a drunk driving case. Undergraduate students are participating in the study and indicate their verdict in the case. Different charges are available for the participant to select, and their responses will be analyzed depending on which one of several conditions they are assigned. The results of my study will contribute to the understanding of juror decision making when a defendant is on trial for drunk driving.

Session 2 ~ 2:00pm – 2:45pm

Biological Sciences

1. Myosin III Regulation of Actin Dynamics ~ *Adam Smith*
Photoreceptor cells contain an actin cytoskeleton, react to light and circadian signals, and their function is critical for normal vision. A major protein located in photoreceptors of Limulus polyphemus is myosin III, which undergoes rapid post-translational modification in response to light and circadian signals. Concurrently, the cytoskeletal architecture of Limulus neurons is markedly rearranged. We hypothesized that signaling events that lead to post-translational modification of myosin III are the root cause of actin cytoskeletal rearrangements.

2. The Characterization of a New ACE2 Overexpression Mouse Model, Alk1Cre/ACE2KI ~ *Christena Pellett*
The angiotensin converting enzyme 2 (ACE2)-Angiotensin-(1-7)-Mas axis plays a protective role in lung injury. Currently there are no endothelial ACE2 overexpression mouse models. We hypothesized that Activin-Like-Kinase-1 Cre Knock In (Alk1creKI) line can be utilized. In Alk1creKI versus control, genotyping and immunohistochemical analyses determined that ACE2 overexpression may cause lesions and inflammatory/immune cells in bronchi, vessels, and alveoli. Thus, we conclude that early ACE2 overexpression results in a homeostatic imbalance of counterregulatory mechanisms.

3. 1-Aza-Adamantanetrione Derivatives from a Common Benzotrifuranone Intermediate ~ *Christopher Marth*
The implementation of minute interactions to effect a macro-level change has already been mastered by Nature, yet chemists continue to grapple with these intricate supramolecular interactions. In this research project a small library of 1-aza-adamantanetrione (AAT) derivatives, compounds with a novel donor-σ-acceptor motif not previously employed in self-assembly studies, were synthesized and had their gelation properties studied. It was found that an electron-rich and electron-poor AAT displayed cooperative behavior in the gelation of solvent.

4. Targeted gene delivery into human chromosomes using chimeric piggyBac transposase ~ *Gevalin Srisooksai*
The piggyBac transposon is a potentially powerful non-viral gene delivery vector for gene therapy and research. Using its transposase to mediate the "cut-and-paste" process, piggyBac can precisely hop into the chromosome to generate a long-term expression of desired gene(s). Although this transposon is safe compared to viral vectors, these virtually random insertions could disrupt normal gene functions. Therefore, our study uses modified DNA-binding protein to direct piggyBac transposition into the pre-determined targets on human chromosomes.

5. Fructose-induced Alterations in Gene Expression in the Intestine ~ *Jamie Titen*
Nuclear Hormone Receptors (NHRs) are ligand-inducible transcription factors that regulate gene expression. The goal of this experiment was to show whether fructose can induce alterations in NHRs leading to the development of metabolic syndrome. Using real-time PCR, the results showed increased expression of human farnesoid X receptor (hFXR) in 22-hydroxycholesterol treated cells. It is possible there could be a change in hFXR expression by human liver X receptor alpha (hLXRα) agonists.

6. Effect of cytoskeleton inhibiting drugs on Leishmania parasite development in macrophages ~ *Kelly Johnson*
Leishmania are parasites that reside in parasitophorous vacuoles (PVs) within macrophages. We investigated the role of cytoskeleton on Leishmania development in macrophages. After infections were established, macrophages were treated or not with colchicine or cytochalasinD (two cytoskeleton inhibiting drugs. Immuno-fluorescence assays and microscopic analysis revealed that the number of parasites in PVs was significantly reduced after drug treatment. This suggests that Leishmania parasites exploit host vesicular transport system to replicate in macrophages.

7. Long Term Effects of Hypobaria on Radish Growth, CO2 Assimilation, and Transpiration ~ *Samantha Smith*
Plants can grow in low pressure environments and possibly on Mars or the Moon. Therefore, effects of hypobaria on radish were studied. All low pressure treatments had higher transpiration rates than the control. An increase in CO2 assimilation occurred in the long-term low pressure studies, whereas, short-term hypobaria exposure had a decrease in CO2 assimilation. These studies are preliminary steps towards developing support tools to manage limiting resources for crops grown on extended space missions.

8. Kinetics of Intermolecular Proton Transfer in Catalysis by Human Carbonic Anhydrase II ~ *Seungjin Jang*
Human Carbonic Anhydrase II (HCA2) is a zinc metalloenzyme that catalyzes the reversible dehydration of bicarbonate and a proton to form carbon dioxide and water. I used kinetic methods including esterase activity and 18O exchange to measure the catalytic activity of the mutant Asn62Leu-Asn67Leu-His64Ala HCA2. The pKa value in the active site (6.9) decreased to 6.6. The rate of proton transfer was rescued by intermolecular proton transfer as described by Marcus theory.

9. Biodigester Design for Developing Regions ~ *Taylor Norrell*
Anaerobic digestion is the breakdown of complex organic material into biogas and a nutrient rich effluent. This process can be harnessed through anaerobic digesters and the methane rich biogas produced can be used as a heating/cooking fuel, while the effluent can be used as a fertilizer. The focus of this study is to build an anaerobic digester using minimal materials in an effort to make the technology as economically feasible as possible for poorer regions.

10. The Anti-apoptotic Function of Mcl-1 is Regulated through Nicotine-Induced Phosphorylation and PP2A-Mediated Dephosphorylation in Human Lung Cancer Cells ~ *Ton Wang*
Lung cancer has a strong etiological association with cigarette smoking. Nicotine, a major component in tobacco smoke, functions as a survival agonist that inhibits apoptosis following various stresses. However, the mechanism of action remains elusive. Mcl-1, a major anti-apoptotic protein of the Bcl-2 family, is extensively expressed in both small cell and non-small cell lung cancer cells, suggesting that Mcl-1 may be a therapeutic target for patients with lung cancer. We found that nicotine induces Mcl-1 phosphorylation through activation of ERK1/2 kinases in association with increased chemoresistance of human lung cancer cells. Nicotine stimulates Mcl-1 phosphorylation at the T163 site, which is required for nicotine-mediated survival. Mechanistically, nicotine-induced Mcl-1 phosphorylation significantly enhances the half-life of Mcl-1, rendering Mcl-1 to have long-term survival activity. Additionally, specific depletion of Mcl-1 by RNA interference blocks nicotine-stimulated survival and enhances apoptotic cell death. In contrast, we have also demonstrated that protein phosphatase 2A (PP2A), a mitochondrial serine and threonine phosphatase, is able to dephosphorylate Mcl-1 and potentially decrease its anti-apoptotic function. These results suggest that the anti-apoptotic ability of Mcl-1 is alternately controlled by nicotine-enhanced phosphorylation at the T163 site and PP2A-mediated dephosphorylation. A comprehensive understanding of the mechanisms regulating Mcl-1 activity may provide insight on the development of lung cancer and/or chemoresistance associated with cigarette smoking.

11. Fine mapping of the maize rough endosperm4 mutation ~ *Tyler S. Policht*
Cereal grains are central to agriculture and supply the bulk of our food and feed. The Settles laboratory is taking a forward genetics approach to identify genes that are critical for grain development. The rough endosperm4 (rgh4) mutation exhibits reduced grain-fill and causes a lethal seedling phenotype. An F2 mapping population was generated by introgressing the mutation into the B73 inbred line. SSR markers were used to construct a fine map position for the rgh4 mutation.

Design, Construction, and Planning

12. Water Cultivation in Rural Mexico ~ *Clay Anderson*
Uncontrolled storm water is a constantly occurring global problem. People in rural communities are particularly vulnerable due to the lack of proper infrastructure to direct and manage the power of water driven by storms. The town of San Martin de las Cañas has served as a place to investigate how to manage

flooding through the landscape and architecture. Designing to combat the unpredictable amount of water serves as a way of protecting towns and villages.

Engineering

13. Mechanical and Electrical Properties of Carbon Nanotubes ~ *Aura G. Cruz*
This project investigates the use of carbon nanotube films as potential materials for electrical and mechanical contacts. The mechanical flexibility and electrical contact resistance of vertically aligned carbon nanotube films are experimentally tested. Experimental results are obtained on a laboratory scale, but are discussed based on potential for scaling to real world applications. Two main potential applications discussed are low force electrical contacts used in micro-scale electrical devices and as brush materials within electrical motors.

14. A Study of the Absorption Properties of Lead Phthalocyanine Thin Films for Photovoltaic Applications ~ *Caitlin Dennis*
Due to their comparatively low manufacturing costs and ability to be created on flexible substrates, organic electronics are becoming a more prominent solution to today's technological issues. However, in photovoltaic applications, there are still large efficiency gains to be made before organic devices are comparable to their inorganic counterparts. This study aims to quantify the effect of deposition rate and thickness on the absorption properties of thin film Lead Phthalocyanine for use in photovoltaic devices.

15. TMS320F28335 application to UF's EEL4744 course ~ *Damian Szmulewicz*
The purpose of this research was to replicate the solutions for lab assignments in the EEL4744-Microprocessor Applications course, for the TI TMS320F28335 DSP. The new DSP would allow the course to become more modernized, as the old motorola 68HC12 is obsolete and will soon be taken out of production.

16. 14:00:00 ~ *Heather Enos*
Sustaining water resources is crucial to maintaining water supplies for current uses as well as uses for the foreseeable future. Water in the root zone, i.e. in the top one meter of the soil, is the primary driver for hydrological processes. Accurate knowledge of root-zone soil moisture is therefore critical to evaluating and predicting the fluxes and pathways of water. This study demonstrates the feasibility of using remotely sensed microwave observations to improve quantification of root zone soil moisture, and hence, of water availability.

17. Research on Lead (Pb)-Free Piezoelectrics ~ *Humberto Foronda*
Project consisted of processing the lead-free piezoelectric Sodium Bismuth Titanate (NBT). Dopants such as Lanthanum, Iron, and Manganese were added in some samples to see how the micro and macroscopic properties would change. Also examined how and where dopant Lanthanum would sit in NBT unit cell. Data was retrieved using X-Ray Diffractometer.

18. Optimization of Aerodynamic Efficiency Using Synthetic Jets ~ *Keith Javier Stober*
A NACA0025 airfoil in a 1 ft. x 1 ft. test section open-loop wind tunnel is used to demonstrate the effectiveness of separation flow control techniques on increasing aerodynamic efficiency by delaying stall at airfoil angles of attack above 12°. A control system is implemented which utilizes as inputs unsteady pressure over the airfoil upper surface and controls the flow by employing synthetic jet actuators to transfer momentum to the pre-separation boundary layer with zero net mass flux.

19. Characterization of Lightning Electric Fields ~ *Michael A. Haddad*
The characteristics of the lightning return stroke, the component of a lightning flash known for its intense luminosity, and its associated electric fields are analyzed. Lightning flashes measured from the Lightning Observatory, located on the University of Florida campus, were recorded over the summer and studied in detail. The effect on the electric field characteristics with distance, a range of over 300 kilometers, is explored.

20. Modeling Sodium Bicarbonate Breakage in an Air Jet Mill ~ *Nathan Morgan*

Sodium bicarbonate is used as a test powder to explore particle breakage in pharmaceutical air jet milling applications. The project aim is to develop a general model for particle breakage based solely on material parameters and milling conditions. Preliminary results based on sodium bicarbonate are presented for a variety of mill and particle size conditions.

21. Chemical and Physical Factors Affecting the Size and Shape of Bioactive Glass Microspheres ~ *Nick Sexson*
Bioactive glass microspheres are a potential method to precisely control local drug delivery to infected bone. To control delivery one must control the rate of dissolution and the size of the microspheres. We investigate the effects of acid and base catalysis, inorganic and organic composition, and rheology on microsphere formation and dissolution. The goal of this study is to develop a model which accounts for the chemical and physical factors to predict the size of bioactive glass microspheres.

22. A Systems Model for the Lake Jesup Total Phosphorus Removal Treatment Technologies Floating Island Pilot Project ~ *Robert Compton*
This poster describes the development of a systems model for the Lake Jesup Total Phosphorus Removal Treatment Technologies Floating Island Pilot Project. The project called for the design of a prototype floating island treatment system (FITS) to remove nutrients from Lake Jesup in Sanford, Florida. The model will simulate phosphorous uptake of the system so as to predict its long term effectiveness as well as treatment efficiencies for different hydraulic and phosphorus loading rates.

23. Effectiveness of the Greedy Algorithm on the Destruction of Nodal Networks ~ *Roshan Goli*

In a nodal network, nodes, such as email accounts, are connected to each other by edges, which correspond to the email contacts in the address book. The most common way to destroy these networks quickly is to use a "greedy algorithm," which consists of sequentially removing the nodes with the most number of connections. Our goal is to show that we can use optimization techniques to destroy the same networks while deleting fewer nodes than the greedy algorithm.

24. Solid Waste Containment in Kratovo, Macedonia ~ *Ryan Monaghan*
This research tracks the design of a viable and ecologically friendly solid waste containment unit in Macedonia by students in the UF chapter of Engineers without Borders. This landfill design will incorporate design constraints from the municipality of Kratovo, alongside EU waste requirements.

25. High Speed Photometer Array Design and Implementation ~ *Ryan Nuzzaci*
My research involves the design and implementation of a photometer array system that can be used to observe ionospheric, transient luminous events (TLEs) that occur above lightning storms at the International Center for Lightning Research and Testing (ICLRT). With my design these luminous events can be observed at speeds 100 times faster than any previous experiment, enabling the detection of sub-microsecond duration pulses of light that may be associated with distinct elements of the causative lightning flash.

Health-Related

26. Long-Term Survival and Acute Kidney Injury during Hospitalization after Major Neurosurgical Procedure ~ *Alina Roche & Alison Rioux*
We studied the effect of acute kidney injury (AKI) defined by the RIFLE classification on long-term survival in a cohort of 3,299 neurosurgical patients at the University of Florida. Long-term survival was analyzed with a Cox proportional hazards regression model. The long-term mortality was proportional to the severity of AKI and even patients who regained full kidney function still had a higher risk of mortality.

27. Ouabain Induced regulation of Aqeous Humor Outflow ~ *Binna M. Chokshi*
Na-K-ATPase-inhibition by ouabain results in decreased IOP however mechanisms aren't understood. Increases in resistance causes high IOP. To examine the role of ouabain in regulating aqueous-humor-outflow-facility and ouabain effects on TM-cell-morphology, actin-cytoskeleton, Na-K-ATPase-expression. Porcine-eye-anterior-segment-organ-culture used to measure outflow-facility. Ouabain perfused

through anterior-eye-segment and outflow-facility measured. Cell morphology visualized using differential-interference-contrast microscopy. Protein-concentration measured by Lowry Protein assay, separated by gel-electrophoresis, transferred to nitrocellulose membrane electrophoretically. Western blots stained with Na-K-ATPase-isoform-specific antibodies are used for ATPase-expression.

28. The Interactions Between the Adenovirus E1A and p300 ~ *Darinka Aragon*
p300 is a cellular transcriptional coactivator that is involved in regulating cellular growth, cellular division, cellular differentiation, and in preventing the growth of cancerous tumors. Research has shown that when the adenovirus E1A interacts with p300, it inhibits its functions and causes the growth of cancerous cells. We have conducted yeast two-hybrid assays to understand precisely how E1A binds to p300 at the molecular levels as well as how E1A promotes cell transformation.

29. The Role of Alveolar Epithelial Cells in Bleomycin-Induced Pulmonary Fibrosis ~ *Dorna Pourang*
Bleomycin is an anti-cancer agent used to treat Hodgkin lymphoma, carcinomas, and testicular cancer. Unfortunately, one in ten people treated with bleomycin develop pulmonary fibrosis, and ten percent of those affected die. This experiment used in vitro studies to determine whether alveolar epithelial cells, protective cells that line the alveolus of the lungs, are directly involved in the mechanism that causes pulmonary fibrosis.

30. Blood Levels of hyper-phosphorylated Neurofilament as a Predictor of Lesion Severity and Functional Recovery Following Spinal Cord Injury in Rats ~ *Eric Brunk*
Clinical tests do not effectively predict functional potential post-spinal cord injury (SCI). Effective prediction would enhance the timing and type of rehabilitation pursued. Hyper-phosphorylated neurofilament (pNF-H) is present in adult axons and is released upon damage. Using a rodent model of cervical SCI, we show that blood levels of pNF-H may identify lesion severity. Our data suggests relationships exist between pNF-H and SCI severity based upon molecular and histological markers, as well as behavioral recovery.

31. Effects of Mutation at Trp5 on the Catalystic and Structural Properties of Human Carbonic Anhydrase II ~ *George CB Ling*
The purpose of this experiment was to determine the effects of different point mutations on human carbonic anhydrase 2 at Trp5. Trp5 directly interacts via pi orbital stacking with His64, the main residue involved in proton transport. This process is vital in the catalytic cycle of HCA2, which is important in maintaining homeostasis in the human body. X-Ray crystallographic and kinetic analyses were used to determine the effects of four site-specific mutants.

32. Epigenetic Regulation Identifies Tumor Suppressor Genes In Liver Cancer ~ *Jason Zakko*
Homeobox superfamily genes were screened to determine expression in DNA de-methylation reagent treated and untreated liver cell lines. Screening our initial group of genes, eight interesting potential tumor suppressor genes were studied, and of those eight, DLX4 was found to be the most promising. In current literature, phosphorylated DLX4 has been implicated in liver cancer. This project demonstrates that these genes including DLX4 are regulated by epigenetic modification.

33. Use of complementary and alternative therapies to manage cancer related symptoms in hospitalized patients ~ *Jennifer Jonas*
Patients with cancer frequently experience pain, fatigue, and sleep disturbances. This study investigates (a) various types of complementary and alternative therapies (CAM) patients currently use to manage cancer-related symptoms, and (b) level of interest in CAM use. A sample of hospitalized cancer patients and their caregivers will complete an anonymous survey to assess self-reported pain, fatigue, sleep disruptions, and symptom management therapies. The study is ongoing and preliminary findings will be presented.

34. Molecular Docking as a Method to Identify Antibacterial Compounds ~ *Jessica Asencio*
Molecular docking uses supercomputers to find compounds that should bind a protein target. We used this method to identify compounds to inhibit targets in bacterial pathogens: FadR (a regulatory protein in Vibrio vulnificus), the MexB/OprM antibiotic pump in Pseudomonas aeruginosa, and the GacS/GacA signal

transduction pathway. The FadR study yielded compounds that killed V. vulnificus in vitro, but failed to prevent infection in a mouse model. No inhibitory compounds were identified in the other screens.

35. Efficacy of a Peer Based Worksite Health Intervention on CVD Risk Factors in Firefighters: A Pilot Study ~ *Jordan Miller*
This study is to evaluate the efficacy of a worksite intervention on improving physical fitness in firefighters failing to meet "fit for duty" requirements. Ten subjects were identified as not meeting "fit for duty" standards and received an intervention. Ten subjects were randomly selected for control conditions. Post-intervention testing was conducted. Baseline measures have been collected on all firefighters. Baseline results demonstrate a good, but wide distribution of physical fitness levels within the sample of firefighters.

36. PKR is required for sensitivity of breast cancer cells to chemotherapy ~ *Krystal R Kerney*
The double-stranded RNA dependent Protein Kinase, PKR, regulates cell death in response to cellular stress. Now we observe the level and activity of PKR is increased in breast cancer cells compared to normal cells. Furthermore, when PKR expression is reduced using siRNAs, breast cancer cells lose sensitivity to chemotherapy and have increased levels of p53. Thus, PKR may be a viable bio-marker for breast cancer, and future treatment may be augmented by activation of PKR.

37. Soy Isoflavones Inhibit the Response to Hypoxia in Prostate Cancer Cells ~ *Maggie Li*
Soy protein is low in fat and contains phytochemicals such as isoflavones that have anti-inflammatory antioxidant properties. Prostate cancer cells (PC-3) treated with soy concentrate showed a decrease in cell proliferation under both normoxic and hypoxic conditions. Analysis by western blots and immunocytochemistry showed alteration of protein expression including CAIX, vimentin, Akt, and p21, all cell regulatory mediators.

38. Development of a Fluorescent Competitive Binding Assay for Structure-Activity Relationship (SAR) Studies of the Melanocortin Receptors ~ *Marie Morrow*
The goal of this project was to design a novel fluorescent binding assay for use in structure-activity relationship studies of the human melanocortin receptors. The current assay employed by our lab uses a radioactive isotope as a tracer, which can be costly, dangerous to use, and time-sensitive. A series of fluorescent-tagged peptides were synthesized for use in the fluorescence polarization binding assay, a safer and more "green" chemistry.

39. Community Readiness for Tobacco-Control Policies: Young Adults' Support for Different Policy Types ~ *Peter Bingham*
The initiation of tobacco use among youth and young adults, as well as the exposure to secondhand smoke are relevant issues for policy development. One effective method to evaluate whether or not new laws & policies will be well received in a community is to assess the community's level of readiness. We hypothesize that the young adult population will be more supportive of policies targeting the initiation of tobacco use rather than exposure to secondhand smoke.

40. Effects of Pathology on the Correlation between Tongue Anatomy and Taste Perception ~ *Robert Orynich*
Supertasters are individuals with the most fungiform papillae (structures that house taste buds) and are expected to experience the most intense taste sensations. Some studies fail to demonstrate this relationship. We hypothesized that this discordance resulted from damage (pathology) to the taste system (e.g. dental anesthesia). Counting fungiform papillae and measuring taste perception in individuals with and without taste damage confirmed that less taste damage demonstrated greater correlation between tongue anatomy and taste perception.

41. Osteoporosis and osteopenia in both early and late Parkinson's disease in men ~ *Sara Daniel*
Osteoporosis and osteopenia are common in neurologic diseases that affect physical activity and mobility. In Parkinson's disease (PD), decreased motor function and postural instability increase the risk for osteoporosis/osteopenia, falls, and potentially fractures. Male PD subjects with PD less than 5 years versus 5-10 years were compared in terms of bone health-related behavior and bone mineral density. Bone loss was present even in those with early PD, suggesting the need for early osteoporosis screening.

42. Effect of Radiation on Brain Tumor Stem Cells ~ *Sebastien Millette*
Neural stem cells have been identified in the adult mammalian brain, but their function in relation to brain cancer is still unknown. Studies have shown that the stem cells' profile makes them highly radio-resistant to radiation. In addition, their proliferation rate post-radiation is increased due to DNA damage. Using the neurosphere assay to culture the glioblastoma cells, different populations were analyzed to determine the true nature of the brain tumor stem cells post-radiation.

43. Antagonism of corticotropin-releasing factor-1 in the central nucleus of the amygdala prevents the deficit in brain reward function characteristic of nicotine withdrawal in rats ~ *Stacey Scheick*
My experiment investigated the contribution of CRF1 receptors in the central nucleus of the amygdala on the negative emotional mood state present in nicotine withdrawal. Using a CRF1 receptor antagonist, we prevented the deficit in the brain's reward system characteristic of withdrawal. This experiment helps to elucidate one aspect of the neural mechanisms underlying withdrawal and further supports the evidence suggesting that small molecule CRF1 receptor antagonists may be clinically useful in preventing nicotine relapse.

44. Mechanism of Porphyromonas gingivalis control of host cell cytoskeleton ~ *Zachary Hirsch*
Porphyromonas gingivalis is an important oral pathogen and a causative agent of periodontal disease. The processes of P. gingivalis entering cells of the gingival epithelium have been shown to be dependant upon the host cytoskeletal proteins. My research involves studying the mechanism that induces cytoskeletal rearrangement by observing the levels of certain proteins, namely cofilin, in the gingival epithelial cells when inoculated with wild type and mutant strains of the bacterium over certain time intervals.

45. An arm's length: Estimating allocentric versus egocentric distances ~ *Tigran Kesayan*
There may be different systems used in estimating the size of our body and its parts (egocentric) and estimating spatial distances (allocentric). To test this hypothesis 13 participants were required to make allocentric and an egocentric estimates of similar lengths-distances. Participants made significant errors when estimating allocentric distances but were accurate when estimating egocentric distances, supporting the hypothesis that different brain systems are used to make egocentric (length-width) and allocentric (distance) computations.

Humanities and Fine Arts

46. Al-Manar: The Voice of Hezbollah ~ *Husam Wahdan*
In the wake of the attacks on the World Trade Center and with the War on Terror raging in both Iraq and Afghanistan, new- found attention has shifted to Arab news media, alien to the United States and Europe in the past. The Arab media's tendency to feature more anti-war voices than pro-war views reinforces the criticism of a lack of objectivity in the eyes of the West. This paper seeks to describe the evolution of Arab media, following the 9/11 attacks on the United States and the shift in media content following the invasion of Iraq, with special focus on broadcasting, through a case study of Al-Manar. Al-Manar, an influential and popular news station with ties to Hezbollah, an organization viewed as terrorists according to the West, is a prime example of the evolution of an Arab media station.

47. Developing Strategies for the Prevention of Vocal Problems Among Music Educators ~ *Kathleen M. Crane*
The voice is the greatest tool of the music educator, whose daily tasks require efficient and healthy voice use in speaking and singing. To measure vocal efficiency, students preparing for a career in music education were acoustically screened before and after a prescribed, video recorded teaching task. The data from the acoustical measurements with evidence from the video recording and a questionnaire regarding their vocal health are analyzed with the intention of improving vocal efficiency.

48. Collaborative Printmaking ~ *Nicholas Pilato*
The University Scholars Program allowed me to travel to the University of Wisconsin and work as an printers apprentice at Tandem Press. Tandem Press is one of the largest and most prestigious collaborative printmaking studios in the world. While at Tandem I worked on several print projects including those of

Judy Pfaff, Joan Snyder, Nicola Lopez, and Suzanne Caporael. The opportunity allowed me to expand my creative research which in turn, furthered my career goals in the field of printmaking.

49. Transplanting Tulsi: Sacrality and Commodification ~ *Sarah Leigh Prentice*
Drawing on extensive field research as well as textual sources, this presentation addresses the changing religious and cultural meanings of Tulsi (Ocimum sanctum), also known as Holy Basil, in the process of its "transplantation" from India to the United States. The ritual, medicinal, and commercial aspects of Tulsi, which is widely regarded as one of the most sacred plants in the Hindu tradition, are discussed with emphasis on regional and sectarian variation.

Physical Sciences

50. Exhumation/Uplift Rates of the Pioneer Mountains in South-central Idaho Using U-Th/He Isotopes ~ *Alberto Carmenate*
The purpose of our research is to investigate the timing, rates and causes of uplift and exhumation of the Pioneer Mountains in south-central Idaho using U-Th/He dating techniques. Using U-Th/He thermochronology combined with existing 40Ar/39Ar, we are providing a partial cooling-exhumation history as the rocks were exhumed from the middle crust to within 2-3 km of the Earth's surface.

Social Sciences

51. A New Brand of Hospital Advertising ~ *Kaitlin Watson*
In a world where almost anything can be purchased on the internet, consumerism has become king. The health care industry is no exception. Hospitals are fighting for market share, and have turned to a variety of advertising methods to gain an edge over the competition. The presented research examines branding in hospital advertising, starting with a look at branding as a general advertising method and progressing to its use, effectiveness and potential in the hospital industry.

52. Public Relations Social Media Trends in Spain ~ *Kathryn Watson*
In a world where communication techniques and technologies change constantly, the most prominent topic in the communications industry is social media. Though social media campaigns are common in the United States, public relations efforts in other countries have not yet caught up to the viral marketing of the United States. This research examines the social media market in Spain and how its users communicate in order to establish a social media profile for the country.

53. Gender Disparities in Plea Bargains ~ *Kristen Hamilton*
There are competing hypotheses which attempt to explain gender inequalities in sentencing. Previous research has predominantly focused on the chivalry or paternalism hypothesis. The current study examines the competing hypotheses to determine whether females who commit violent crimes which violate traditional gender roles are more likely to receive incarceration or a longer sentence than their male counterparts. The chivalry or paternalism hypothesis was supported by the findings of the current study.

54. Personality and Leadership: The Effects of Perfectionism ~ *Kyle Sandell*
This study investigates the relationship between perfectionism and leadership style in working managers. Perfectionism was measured as a multidimensional construct with both positive (adaptive) and negative (maladaptive) forms. Several leadership styles were measured as well, and manager self-esteem levels and personality were also assessed in order to highlight any further relationships. This study is the first to attempt to understand the potential impact of perfectionism on leadership style.

55. Estimating Intoxication Level from Speech ~ *Marilyn Ouellett*
This study examined potential acoustic correlates to the effects of intoxication on speech articulation. Twelve female and eleven male speakers were recorded producing two types of speech samples (passages, hypoarticulated diadodes) at four intoxication levels (BrAC = 0.0, 0.04, 0.08, 0.12). Discriminant analysis was used to model intoxication level and estimate the relative importance of 13 acoustic correlates to phonation and articulation, including mean and variance measures of pitch, vowel space, formant frequencies, and disfluencies.

56. Microfinance in the United States ~ *Mary Gregoire*
Microfinance in the United States began around the late 1980s and has gained momentum throughout the country in the last five to ten years. Microfinance and microcredit loans facilitate entrepreneurship in low-income communities with the average loan ranging from $500 - $35,000. This research will present an overview of the history of microfinance, differences between U.S. microfinance organizations and those from the developing world, as well as statistics from various microfinance organizations throughout the country.

57. Who's on First? How and Why the 2010 Congressional Candidates are Campaigning on Facebook and Twitter ~ *Matthew Newman*
Over the last decade, U.S. congressional candidates began embracing the Internet as a unique facet of their campaigns. In addition to using traditional online campaigning methods, candidates have been increasingly adopting accounts on dynamic social networking sites (SNSs). This research examines empirically how and why the 2010 congressional candidates are using Facebook—currently America's most popular SNS—and Twitter—currently America's fastest growing SNS—at the start of their campaigns.

58. Defining Japan's Cultural Nationalism and It's Influence in the Decline of Japanese Studying Abroad ~ *Melissa Goldman*
Literature has ascribed Japan's cultural nationalism to a set of select behavioral and mental traits which are ancestrally rooted, untainted and unique. These attributes are grouped into the extremely commercialized term Nihonjinron. Scholars are concerned that this worldview is hindering individuality and international relations. However, Japan's internal internationalization and participation in maintaining peace validates their conscious effort to globalize. This study specifically investigates Nihonjinron's influence in the declining rate of Japanese studying abroad in America.

59. Inventory And Sales Growth Trends ~ *Patrick Breshike*
This study examines the cause and effect relationship between sales growth and inventory trends. Investigating three years of data for publicly traded companies, to determine how changes in inventory effect sales growth and vice versa. Undertaken to discover trends and possible predictive models for changes sales growth, thus changes in firm value, for publicly traded companies using readily available data.

60. Effects of Mood Induction on Test Anxiety ~ *Shan Wong*
Test anxiety handicaps one's ability to perform well on exams. To examine altered anxiety levels through mood change, experiments were conducted in laboratory and classroom settings. Between two tests, students were assigned randomly to a happy, sad, or neutral mood induction. Results showed that individuals with high anxiety and happy mood induction raised their scores significantly across the two tests. These results emphasized that test anxiety could be alleviated through a positive mood induction.

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Samantha Smith	Poster - 7	Rion Ballroom	2:00-2:45pm
Sara Daniel	Poster - 41	Rion Ballroom	2:00-2:45pm
Sara Stout	4.D.	286 Reitz	3:00-3:45pm
Sarah Comstock	4.H.	278-279 Reitz	3:00-3:45pm
Sarah Connolly	1.C.	285 Reitz	9:45-10:30am
Sarah McKenzie	Poster - 40	Rion Ballroom	10:45-11:30am
Sarah Leigh Prentice	Poster - 49	Rion Ballroom	2:00-2:45pm
Scott Lee	2.G.	276-277 Reitz	10:45-11:30am
Sebastien Millette	Poster - 42	Rion Ballroom	2:00-2:45pm
Seungjin Jang	Poster - 8	Rion Ballroom	2:00-2:45pm
Shan Wong	Poster - 60	Rion Ballroom	2:00-2:45pm
Shannon Moore	3.A.	282 Reitz	2:00-2:45pm
Shannon Nangle	4.A.	282 Reitz	3:00-3:45pm
Stacey Scheick	Poster - 43	Rion Ballroom	2:00-2:45pm
Stefan Bird	2.H.	278-279 Reitz	10:45-11:30am
Stefan O'Dougherty	2.F.	272-273 Reitz	10:45-11:30am
Stephanie Gillespie	3.C.	285 Reitz	2:00-2:45pm

Name	Session #	Room	Time
Stephen Morgan	2.B.	284 Reitz	10:45-11:30am
Steven Buss	1.E.	287 Reitz	9:45-10:30am
Steven lambrou	3.G.	276-277 Reitz	2:00-2:45pm
Sunita Chutkan & Cari Herrington	1.C.	285 Reitz	9:45-10:30am
Taylor Norrell	Poster - 9	Rion Ballroom	2:00-2:45pm
Theresa Floyd	4.F.	272-273 Reitz	3:00-3:45pm
Thomas McGilvray	Poster - 25	Rion Ballroom	10:45-11:30am
Thu-Cuc Nguyen	Poster - 41	Rion Ballroom	10:45-11:30am
Tiffany Cowen	4.C.	285 Reitz	3:00-3:45pm
Tigran Kesayan	Poster - 45	Rion Ballroom	2:00-2:45pm
Tim Phan	Poster - 26	Rion Ballroom	10:45-11:30am
Tolulope Bukola	2.E.	287 Reitz	10:45-11:30am
Ton Wang	Poster - 10	Rion Ballroom	2:00-2:45pm
Tyler S. Policht	Poster - 11	Rion Ballroom	2:00-2:45pm
Vaishnavi Purusothaman	3.C.	285 Reitz	2:00-2:45pm
Victor V Albert	1.F.	272-273 Reitz	9:45-10:30am
Vlad Pascu	Poster - 27	Rion Ballroom	10:45-11:30am
Whitney Howard	1.C.	285 Reitz	9:45-10:30am
Will Penman	3.D.	286 Reitz	2:00-2:45pm
Xavier Monroe	1.D.	286 Reitz	9:45-10:30am
Yong Tan	Poster - 10	Rion Ballroom	10:45-11:30am
Zachary Hirsch	Poster - 44	Rion Ballroom	2:00-2:45pm

Faculty Mentors

Adrian Roitberg

Adrie Bruijnzeel

Aida Hozic

Alyson Young

Andrea Behrman

Andrea Sterk

Ann Horgas

Ann Wehmeyer

Ann Wilkey

Ant Ural

Anthony Brennan

Anthony Windebank

Azra Bihorac

Ben Koopman

Blaise Ndjamen

Bobbi Langkamp-Henken

Bradley S. Fletcher

Bradley Walters

Brenda Chalfin

Brenda Smith

Brent Reynolds

Brian Harfe

Brian Silliman

Carmen Rodriquez

Carrie Haskell-Luevano

Catherine Cottrell

Charlene Krueger

Charles H. Wood

Chen Liu

Christine D. Chase

Christine Miller

Christine Stopka

Clayton E. Mathews

Cole Smith

Cory Armstrong

Daiqing Liao

Dan Brown

David Brown

David Denslow

David Julian

David Mazyck

David Ostroff

David N. Silverman

Deanna K.W. Pelfrey

Debbie Treise

Dena Howland

Dietmar W. Siemann

Don Samuelson

Dorette Ellis

Eboni Baugh

Enrique Bimstein

Eric Keys

Eric Schwartz

Evan Drummond

Fei Liu

Florian A. Siebzehnrubl

Florin Curta

Gary Ellison

George Burgess

Gillian Lord

Grady Roberts

Hollie Hall

Hui Zou

Hwidong Kim

Hyunjoo Oh

Ikramuddin Aukhil

Ingrid Kleespies

Ivan Furic

Jacob L. Jones

James F. Dewey

James Harnsberger

James Sullivan

Jasmeet Judge

Jason Butler

Jeffrey E. Hill

Jesse Dallery

Jessica Harland-Jacobs

Jian Li

Jiangeng Xue

Jianrong Lu

Jim Marks

Jim Vogl

John Banko

John Harris

John Klauder

John R. Sabin

John Sansalone

Jon Stewart

Jonathan Tan

Joseph Katz

Joseph McNamara

Karl Gugel

Kathleen Shiverick

Kathryn Sieving

Ken Rice

Kenneth M. Heilman

Kenneth Wald

Kevin Thompson

Kitty Emery

Kyle J. Roux

Larry Forthun

Larry Kenny

Lauren Lake

Laurie Gower

Li-Jun Yang

Linda Bartoshuk

Linda Lombardino

Lora Levett

Lori Altmann

Louis Cattafesta

M. Cecilia Lansang

Malisa Sarntinoranont

Margaret James

Marguerite Hatch

Maria Coady

Maria Rogal

Marie Louise Ricketts

Mark Brown

Mark Lewis

Mark McGlothlin

Mark Settles

Mark Sheplak

Marvin Krohn

Mary Ann Ferguson

Mary Watt

Mavis Agbandje-McKenna

Melanie Correll

Melissa Johnson

Melissa Maurer-Jones

Michael Annable

Michael Bubb

Michael T. Heaney

Michael S. Okun

Michael Ryngaert

Michael Weiss

Mitchell Estrin

Mohan Raizada

Monika Ardelt

Nancy Denslow

Nina Caputo

Pamela Dickrell

Panos Pardalos

Paul Gulig

Peggy Borum

Peter Collings

Peter Kima

R. A. Shoaf

R. Brandon Kershner

Ranga Narayanan

Rebecca Kimball

Renata Serra

Richard J. Lamont

Richard Lind

Richard Lutz

Robert McKenna

Robert Moore

Robin West

Roger Blair

Ronald Carpenter

Ronald K. Castellano

Russ Bowers

Saleem Islam

Sean Patrick Adams

Seunghee Cha

Sevan Terzian

Shannon Wallet

Shirley Meng

Spyros Svoronos

Stephanie Smith

Stephen Anton

Steve Johnson

Steven Hochwald

Steven B. Pokorny

Subramaniam Jayanthi

Susan M. O'Brien

Taimour Langaee

Tamir Sorek

Tan Wong

Thomas Clanton

Timothy Davis

Timothy Townsend

Tom O'Brien

Tony Delisle

Treavor Boyer

Vasudha Narayanan

Victoria Dickinson

Victoria Pagan

Virginia Dodd

Vladimir A. Rakov

W. Stratford May

Welson Tremura

Wesley Bolch

William Tilson

Xingming Deng

Yiider Tseng

Zhonglin Mou