

First Statewide Graduate Student Research Symposium

Interdisciplinary Research Building
Galleria

Friday, April 19, 2013

1:00 to 4:45pm

Reception to Follow

ResearchOne
ONE UNIVERSITY : ONE COMMUNITY : ONE VISION

USF

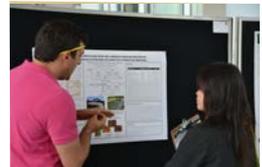
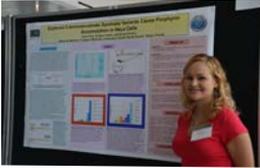
UNIVERSITY OF
SOUTH FLORIDA
GRADUATE SCHOOL



Schedule of Events

Interdisciplinary Research Building Galleria
 Friday, April 19th - 1:00pm - 6:00pm

Poster Session Check-in and Setup	12:30 pm
Poster Session	1:00 - 3:15 pm
Welcome by	
USF Graduate School Dean Karen Liller	3:30 pm
USF President Judy Genshaft	3:35 pm
Certificates of Participation Presented by	
Jan M. Ignash, Vice Chancellor for Academic Student Affairs, State University System of Florida and Graduate Deans	3:45 pm
Closing Remarks by USF Provost Ralph Wilcox	4:15 pm
Wrap-up by USF Associate Dean Peter Harries	4:30 pm
Reception & University Group Photos	4:45 - 6:00 pm



Graduate Student Presenters

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STEM: Biological Sciences

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Graduate Student Presenters

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Title: Architecture Of Metanoia: A Study Of Space And The Transformation Of Consciousness

Name: Mary Alvarez

Category: AS

Program: Architecture

Abstract:

The current state of our collective consciousness is creating in our surrounding the physical manifestation of a world prioritized and driven by economic forces. Our system encourages a culture of endless consumption, and disregards that our natural environment is the most essential resource for the continuing survival of our own human race. A shift of consciousness is necessary to evaluate the current priorities of our society towards a closer relationship to the natural order of things. With Architecture, I intend to contribute to this shift of consciousness. A place that frees itself from man's assemblages, and opens a door to a new dimension of thought will create the experience that will confront our critically damaged set of frames. The space becomes the spirit of transcendence, a threshold to the unmeasurable that allows a subtle transformation in the awareness that we have for our living planet Earth.

Title: A Narrative Traveling Exhibition Of Homelessness And Design's Potential To Create Change

Name: Jhoana Antiquino

Category: AS

Program: Interior Design

Abstract:

On any given night in the United States an estimated 649, 917 people will be homeless (US Department of Housing & Urban Development, 2010). Homelessness has becoming more prevalent yet many shelters are forced to turn away people due to over capacity (National Coalition for the Homeless, 2009; U.S. Conference of Mayors, 2007). Available shelters do not adequately provide an environment that fosters a sense of dignity and belonging, important to help homeless individuals get back on their feet (Vandermark, 2007). Shortage of shelters indicates that the design profession must now reach out to the other 90% of the population that design has neglected to serve (MacLeod & Shivers, 1991 & Design for the Other 90%, 2011). This master's thesis proposes a design for a narrative-style traveling exhibition to heighten interior design students and professional's awareness about homelessness. The project will be executed in three action research phases. In phase one, individuals from five constituent groups will be interviewed to provide the framework for the exhibition. Phase two consists of the development and creation of the exhibition to communicate design strategies that address homelessness, and examples of how to increase designer involvement. During the last phase, the same individuals from phase one will view a 3D model of the exhibition, and will be asked to evaluate the success of the exhibition in conveying information about homelessness. The study's overall objective is to inform with accurate information, change negative perceptions of this issue, and describe various concrete means to take action.

Title: Re-Situating Shakespeare: Hamlet, Metadrama, Danse Macabre, And
The Appropriation Of The "Pyramus And Thisbe" In *Romeo And Juliet*
And *A Midsummer Night's Dream*

Name: Veronica Carroll

Category: AS

Program: Liberal Arts

Abstract:

Through a study of source material, appropriation, and the play-within-the-play theatrical convention used by Shakespeare, this project shows both the rhetorical impact on audiences and the ways in which the texts of *Romeo and Juliet*, *Hamlet*, and *A Midsummer Night's Dream* can be mixed together, using the common themes to create an altered story. This project appropriates Shakespeare using the similar source themes he himself appropriated. During a study of the source material for the play-within-the-play in *Hamlet* (The Mousetrap) and *A Midsummer Night's Dream* ("Pyramus and Thisbe"), I learned that the plot of "Pyramus and This be" provided inspiration for *Romeo and Juliet*. In reaction to these common themes, I wrote a new play using primarily Shakespeare's text, but featuring an altered ending. The play, entitled *I am Juliet*, combines the language of all three plays as well as other Shakespeare plays. To compose the script, I relied on intimate knowledge and memorization of key scenes in each text, which I connected, thematically or textually, to other scenes. Ultimately, I applied the language to the scenes differently than in the original texts resulting in Romeo and Juliet living through the end of the play. As culture acts on existing canonical texts, adaptation of those texts is an inevitable byproduct, but the way in which they are appropriated can be based in study of the original source material and applied to adaptations to highlight a common theme. This process bestows rhetorical importance to appropriated or adapted texts.

Title: The 610 Stompers Of New Orleans: Mustachioed Men Making A
Difference Through Dance

Name: Nikki Caruso

Category: AS

Program: Dance/American Dance Studies

Abstract:

Hurricane Katrina devastated New Orleans. Nearly eight years later, the city still fights to recover. Within this landscape, mustachioed men wearing sweat bands, red satin jackets, blue coach shorts, and gold tennis shoes have emerged. These are the 610 Stompers, a group of everyday men with “extraordinary moves” who have used dance, humor, and their pop-culture celebrity status to literally embody survival, restore positivity, and promote community in post-Katrina New Orleans. The 610 Stompers are a dance marching group on one hand, but a symbol of the American dream on the other. Because of this, I draw on field work, interviews, and movement analysis to trace the ways in which the 610 Stompers physically navigate a shifting terrain and, in doing so, contribute to a cultural renaissance that is sculpting a new identity for their beloved city. Dance is at the forefront of this regeneration through high-energy booty-shaking, the Running Man, “riding the horse,” displays of machismo, and high-fives all around. Their use of popular, nostalgic dance moves references a usable past while providing an opportunity for everyone to be involved with the future of their community. The 610 Stompers are a unique symbol of post-Katrina New Orleans culture. Their story is one of a community pulling themselves up by their bootstraps and moving toward a better future for the city.

Title: Parental Beliefs And Attitudes On Enrollment In A Dual Language Program At An Elementary School

Name: Leah DeLorenzo

Category: AS

Program: Modern Languages & Literatures

Abstract:

In the 2010-2011 school year, there were almost a quarter of a million English language learners enrolled in Florida public schools (Florida Department of Education). Most of these students are placed in mainstream schools with segregated language remediation. Dual language education (DLE) programs offer developmental opportunities that mainstream schools cannot. The purpose of this research was to identify parental attitudes toward immersion programs and define the reasons why parents enroll their children in DLEs. Forty-seven participants completed a questionnaire sent home from their student's DLE. The study data included biographical information, statements depicting the reasons for enrollment rated by a Likert scale, and an area for comments. The study found that overall (1) survey participants rated their child's comfort communicating with Spanish speakers (4.75 out of 5) to be the most important reason for enrollment. A difference was found in responses depending on the ethnic/language group of surveyed participants. Primarily Spanish speakers responded more positively to the statements regarding bilingual education than any other ethnic/language group. Overall, all parents believe the dual immersion program has been a success for their child (all questions of the survey received greater than 4.0 out of 5).

Title: Editing Florida: Editorial Influence In The Florida Historical Quarterly And The Production Of "Legitimate" Knowledge

Name: Sarika Joshi

Category: AS

Program: History

Abstract:

Academic journals and scholarly publications of all disciplines constitute an integral part of the global lexicon of knowledge. They provide the medium with which knowledge is both accumulated and disseminated. In the process, journals also serve to legitimize and define what constitutes “knowledge.” Using the *Florida Historical Quarterly* (FHQ) as a case study, our research examines the workings and politics that shape and influence academic journal publishing. We argue that scholarly journal publishing is not a bias-free enterprise. Instead, it is a reflection of the era and society that created it as well as the personal prejudices and interests of journal editors. Through an examination of personal correspondence of past FHQ editors, conference and convention proceedings of the Florida Historical Society, and past volumes of the *Florida Historical Quarterly*, we are able to draw conclusions about how decisions concerning what constitutes “legitimate” history are made as well as who are included in (and excluded from) the process of constructing our understanding of the past. Through these sources, we are able to examine the tensions that exist between the personal inclinations of journal editors and the societal norms in the production of knowledge. Though limited to the FHQ, our research raises larger questions applicable to any discipline. More broadly, our research reexamines the forces – from personal tastes and social mores to economic constraints – that influence the acquisition of knowledge. It serves to consider the accumulation of knowledge and the processes and channels that determine what constitutes legitimate scholarly knowledge.

Title: Hispanic Orientalism In 18th-Century Castas Paintings (Mexican School)

Name: Svetlana Tyutina

Category: AS

Program: Spanish

Abstract:

The year 1492 marks the change in the direction of the Spanish crusade: from the Reconquest of the Peninsula it shifts to the Conquest of America. The temporal and ideological proximity of these two historical processes could not but influence popular mentality and, hence, the perception of the Other who opposed the new crusaders. Eurocentrism, natural for the Peninsular Orientalism, also played an important role in the Colony. This concept became essential for the interpretation of the social and racial complexity in the New World. An important source for understanding the influence of the Eurocentric Peninsular Orientalism in the Colony are the *castas paintings*, originated in colonial Mexico where they became very popular toward the end of the eighteenth century. The *castas paintings* represent an attempt to categorize the diverse racial mixtures originated from the three dominant races: Europeans (Peninsular Spaniards), Indians (Native Americans) and Blacks (Africans). Among them, there are several groups that are of particular interest. These are Chinos (“Chinese”), Moriscos (“Moresque”), and Genízaros (“Janissaries”) and other groups deriving from them. Despite the apparent referral to people of Chinese and Moorish origin or the military men serving the Ottomans, these names refer to the local castes in the Colony. The presentation will look into the hybrid nature of these groups and analyze the links between them and the European Orientalist images of the Chinese, the Moriscos and the Janissaries in order to assess the influence of the Eurocentric vision in the Colony.

Title: The Effect Of A Self-Monitoring Treatment Intervention Package On The Academic Productivity Behavior Of Three High School Students With Autism Spectrum Disorder

Name: Patrick Craanen

Category: ED

Program: Educational & Human Sciences

Abstract:

There is a growing trend to place students diagnosed with Autism Spectrum Disorder (ASD) in general education classrooms. On paper, many of these individuals present with average to above average intelligence, however, to the marked frustration of their teachers and parents as well as the student with ASD, many struggle to stay afloat academically in the general education setting. Researchers in the ASD field point to executive dysfunction and further, to an underlying inability to actively self-monitor one's academic productivity behavior as a primary reason for the academic struggles of this segment of the student population. Although there is some support for the use of assistive technology in facilitating the self-monitoring skills of primary- and intermediate-level students with ASD, there is surprisingly little of the same with regard to secondary level students with ASD who find themselves placed in the general education classroom setting. A multiple baseline across participants design is being employed to investigate the effect of a treatment intervention package consisting of a vibrating alarm wristwatch capable of delivering personalized digital text prompts, a student self-recording form, and a student performance graphing worksheet on the academic productivity behaviors of three high school students with ASD. Preliminary results will be discussed along with implications for clinical practice and the researcher's final phase plans for concluding the study

Title: Effects Of Sight Word Instruction On Fluency

Name: Brian Flores

Category: ED

Program: Curriculum And Instruction

Abstract:

The purpose of this action research study is to investigate the relationship between explicit daily sight word instruction and any impact it may have on word count per minute (WCPM). Increase in WCPM directly correlates to more fluent readers who can move through text quickly and effectively. Understanding this, the operating research question is: what impact will systematic sight word instruction have on WCPM on a first grade fluency passage? This research was conducted over eight week period on 16 heterogeneous students and to determine sight word knowledge, students read words from the Fry word list until four consecutive errors occurred terminating the assessment. From the termination point word lists were rounded up to the nearest 25th word and thereby becoming the instructional word list for the week. Intervention groups were homogeneously created based on word lists and instruction was administered for five minutes prior to guided reading. Each Friday students were reassessed and regrouped. Initial class WCPM fluency was 31.25 with a standard deviation of 27.73 and a standard deviation size of 3.14. After intervention, the classes mean WCPM increased to 48.43 with a standard deviation of 32.20 and a standard deviation size of 3.11; a mean increase of 17.18 WCPM. AT-Test of the class pre- and post-test scores resulted in a $r < 0.001$ ($\alpha = 0.05$) which confirmed significant positive gains in reading fluency. A Pearson correlation resulted in a correlation coefficient of 0.62 ($p < .0001$), showing a strong correlation between sight word instruction and its effect on WCPM fluency.

Title: The Effects Of Peer Editing And Response In A First Grade Writer's Workshop

Name: Kimberly Kopnitsky

Category: ED

Program: Library Education

Abstract:

The revision and editing process can be difficult and challenging for young writers. According to Fitzgerald (1988), this perception can be caused by several different causes. First, students may have difficulty understanding and establishing well-defined goals for their writing. Second, it can be a struggle for primary writers to think about what they desire to say and how to write it simultaneously. This study tested the effectiveness of peer partnerships for editing and response in a first grade Writer's Workshop. The research design was a mixed methods study comprised of qualitative and quantitative data. At the beginning of the study, the teacher modeled the expectations for peer partnership conversations and editing etiquette. The students' worked together to discuss editing options and create problem-solving techniques to enhance each other's writing. The teacher employed the use of a writing attitude survey before and after the study and used a rubric to score a pretest, mid-lesson test, and posttest. Repeat measures ANOVA was carried out for pre-, mid-lesson, and posttests. The findings suggest that peer partnerships for editing and response are effective in enhancing first grade writing in Writer's Workshop.

Title: School Buildings And Student Achievement

Name: Ronald B. Lumpkin

Category: ED

Program: Educational Leadership

Abstract:

This research ascertained the impact of school facility on student achievement. A causal-comparative design determined if the independent variable, school building (old and new) influenced student achievement. The control group was two cohorts of fourth, eighth, ninth, and tenth grade students who attended school in old buildings. The experimental group was two cohorts of fourth, eighth, ninth, and tenth grade students who attended school in new buildings. Transition from an old school to a new school was the treatment. Does the aggregate percentage of fourth, eighth, ninth, and tenth grade students passing the FCAT mathematics and reading subtests increase after transitioning from an old school building to a new facility was the research question formulated for the inquiry. Results from this study indicated that the mean percent of students passing the FCAT mathematics subtest increased from $M = 49.25$ in the old school buildings to $M = 57.04$ in the new school buildings. The mean percent of students passing the FCAT reading subtest increased from $M = 42.35$ in the old school buildings to $M = 45.46$ in the new school buildings. The results from this study add to a growing body of literature and extend the existing knowledge describing the interconnected relationships between facility condition and student achievement.

Title: The Professional Identity Construction Of An Experienced And A
Novice Non-Native English Language Teachers' Identities In Practice

Name: Andrea Lypka

Category: ED

Program: Secondary Education

Abstract:

This case study investigated an experienced (Teacher B) and a novice (the researcher) NNS ELTs' perceptions on their professional socializations during their first year of teaching in an ESL program at a college in the Southern U.S. Drawing on the poststructuralist framework and community of practice theories (Lave & Wenger, 1991), I analyzed interviews, a journal, and annotations on shared literature to reveal how we perceived our professional identities in relation to institutional power. Challenges to our identities as professional ELTs included objections to our linguistic competence, a lack of support from the professional community, and insecurities about our positions. Our discourses revealed that our teaching competences had been undermined by the institution, while the NS ELTs' teaching competences remained less scrutinized. However, through dialogue and mentorship, we co-constructed awareness of our teaching and developed counter-discourses. Studies like this provide some practical implications regarding NNS ELTs' identity negotiations at work and offer new insights into NNS ELTs' perceptions about their professional competencies and coping strategies.

Title: Teachers, Subject Matter, And Multiple Intelligences: Is There A Relationship?

Name: Kelly McCarthy

Category: ED

Program: Adult Education

Abstract:

According to Howard Gardner's Theory of Multiple Intelligences, there are nine distinct intelligences with which humans process information: linguistic, mathematical-logical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic, and existential. Gardner proposes that most people possess several dominant intelligences and often use them simultaneously to solve everyday problems. It is often the combinational use of these intelligences that enables an individual to complete a task exceptionally well. Many studies have been conducted to evaluate how teachers adapt their classrooms activities to account for their student's multiple intelligences. Few researchers however have studied the multiple intelligences of the teachers themselves. This study sought to examine which multiple intelligences were most frequently associated with middle school classroom teachers. It also evaluated if there was a correlation between the subject matter taught by the teacher and their reported dominant multiple intelligences.

Title: Civil Rights Education In Florida

Name: Jennifer Probst

Category: ED

Program: Liberal Arts

Abstract:

Participants of the American Civil Rights Movement demonstrated unwavering courage, daunting determination, and an unbreakable spirit; therefore, the movement deserves a more prominent place in the state of Florida's curriculum. While social studies curriculum continues to emphasize pre-twentieth century American and world history, students are losing touch or are completely unaware of the events that directly affect their society today. With bullying and intolerance inundating our schools, the trials and achievements of the Civil Rights movement will teach students how to work together toward a common goal regardless of race, religion, ethnicity, gender, or appearance. In 1994, the Florida legislature passed a state mandate expanding Social Studies and Language Arts curricula to include instruction on African American history, but it is the fifth of seven foci in a grouping of "post-slavery" topics. A greater emphasis on the American Civil Rights Movement facilitates a deeper understanding of the long fought and continuing battle for civil rights, as well as the power of non-violent activism. Learning about human rights struggles can educate our youth about injustices of the past in the hopes of preventing similar atrocities in the future. The accompanying website explores the foundational efforts of Florida's educational mandates, while allowing educators to access curriculum and share teaching experiences on the topic. Through improvements in educational standards, students will be inspired by the dedication and perseverance of movement veterans, laud diversity, learn from the power of non-violent direct action, and stand up for the injustices they witness on a daily basis.

Title: "Seeing All Steps": A Cogenerative Pedagogical Change Resulting From Using CMPLE

Name: Natan Samuels

Category: ED

Program: Curriculum & Instruction

Abstract:

I describe a high school physics teacher's pedagogical change process, concerning her students' whiteboard presentations during class discussions. Contextualized through a formative teacher--student intervention, the teacher's change in practice developed from her expanding understanding of students' learning preferences and classroom experiences. As a result of the cogenerative changes the teacher put into practice, the teacher was able to help students address their own barriers to communicating and understanding each other's presentations. Data presented include classroom video transcripts and pictures, classroom artifacts, and teacher interview transcripts that were recorded during the instructor's semester--long use of the formative intervention known as the Cogenerative Mediation Process for Learning Environments (CMPLE). In CMPLE, students and instructors use discourse to negotiate, develop, and implement changes to their classroom structure, based on their collective learning preferences. Through following the steps of CMPLE, the teacher proceeded through her own individual change process. My Activity Theory--based analysis, has identified the teacher's change process as 1) the questioning of areas of concern and behavior patterns, 2) analyzing the current state of affairs, 3) constructing a new model of behavior, 4) implementing the new model, and 5) evaluating her changes. Implications include that teachers who enact CMPLE may be able to address problematic aspects of their classroom environment in conjunction with their students, rather than having to figure out and implement solutions by themselves.

Title: Risk Attitudes, Risk Perceptions And Expected Benefits: Evidence Of Positive Change Pertaining To Student Safety

Name: Diana Dawn Scott

Category: ED

Program: School Of Teaching, Learning & Leadership

Abstract:

Lake County, Florida is eliminating bus transportation within the 2-mile radius from schools. Children must embrace the idea of an alternative mode of transportation; walking and biking. However, the children must be prepared to undertake this task of walking safely to and from school. The purpose of this research is to develop an online safety training program for elementary school children and determine whether or not it affects their risk-taking attitude, perception or expected benefits. Risk attitudes, risk perceptions and expected benefits of fourth and fifth grade elementary students are investigated using a risk Domain-specific Risk-taking (DOSPERT) Scale for Child Populations. This study will determine whether safety training positively affects students' risk-taking attitudes, risk perception and expected benefits to avoid the dangers of walking and biking to and from school. Proposition: The safety training course will greatly affect the level of risk attitude, risk perception and expected benefits of those risks in children. The training will promote lower risk-taking attitudes, higher risk perceptions and lower expected benefits among fourth and fifth grade elementary school students.

Title: Mentor Texts - Using Mentor Texts As A Folk Tale Writing Aid In A Third Grade

Name: Allison Wickman

Category: ED

Program: Education

Abstract:

Mentor texts can serve as models for students who are learning to write in a particular style. Students learn about sequencing thoughts and events, author's voice, tone, and genre conventions through the study and imitation of mentor texts. This study explored the use of mentor texts by 25 third grade students when writing an original folktale, legend, or trickster tale. The research design was a mixed methods study consisting of quantitative and qualitative data. At the beginning of the study, the teacher read aloud a folktale and introduced the folktale genre. Students then wrote an original folktale without using a rubric or mentor text. Following the initial writing, the teacher instructed students on how to use mentor texts and rubrics as writing guides. The students then wrote a second folktale. Both student writings were assessed with a rubric that measured genre conventions. Repeated measures ANOVA was carried out on pre- and posttest rubric scores and revealed a significant improvement when students used a writing rubric and mentor text to write their second folktale. The findings suggest the use of mentor texts when writing a legend, folktale, or trickster tale are effective and useful, especially for young writers who need concrete directions when writing a specific genre.

Title: Liposomal Annexin A2 Small Hairpin RNA-mediated Inhibition Of Angiogenesis In Lung Cancer Stem Cells

Name: Terrick Andey, Srujan Marepally, Pomila Singh, & Madip Singh

College: HS

Abstract:

Recent studies support the existence of small populations of pluripotent stem-like cancer cells capable of self-renewal. These cancer stem cells (CSCs) are attributed to the resistance phenotype occurring in many tumors such as invasion and metastasis. Annexin A2 (Anxa2) overexpression is associated with invasion, metastasis and drug resistance in many cancers. The effect of Anxa2 knockdown by a liposomal (nanosome) formulation of Anxa2 shRNA (shAnxa2) on growth and metastasis in H1650 CSCs were investigated. H1650 CSCs were maintained on basement membrane-coated supports in DMEM:F12 media enriched with growth factors. Multilamellar vesicles (nanosomes) were prepared by solvent evaporation and bath sonication. H1650 CSCs were transfected with lipoplexes of shAnxa2 and varying amounts of nanosome in serum-free media. After 4 hrs of incubation, the medium was replaced with regular media and knockdown of Anxa2 analyzed after 48 hrs by Western blot. Inhibition of H1650 CSC sphere formation over 7 days was investigated in lipidure® plates following treatment with lipoplexes for 4 hrs. CSCs were assessed for induction of apoptosis after treatment with lipoplexes (4 hrs) by acridine orange-ethidium bromide staining. The effect of Anxa2 lipoplexes on proliferation, migration and capillary-like tube formation was investigated in human primary pulmonary artery endothelial cells (HPAEC). The effect of Anxa2 lipoplexes on the expression of Anxa2, EGFR, VEGF, and NF κ B was evaluated by Western blot. Efficient loading of shAnxa2 in nanosomes was achieved with high transfection efficiency compared to lipofectamine. Anxa2 shRNA lipoplex was cytotoxic to H1650 CSC spheroids, inhibiting spheroid growth by 30-60% between day 3 and 7. Early and late apoptosis induction was observed after treatment with shAnxa2 with a 2-fold increase of cells undergoing apoptosis compared to shAnxa2-lipofectamine 2000 complex. Anxa2 knockdown (90%) was observed in H1650 CSCs parallel to decreases in EGFR, VEGF, and NF κ B expression as shown by Western blot. High loading and enhanced transfection of shAnxa2 was achieved with the nanosome formulation. Anxa2 knockdown was achieved in parallel with inhibition of H1650 CSC spheroid growth, angiogenesis and induction of

apoptosis. Altogether, these results support evidence that Anxa2 could be a therapeutic target for treatment of non-small cell lung cancer and that nanosome formulation enhances the delivery of shAnxa2 as an anticancer agent.

Title: A P5B-Type ATPase Is Required For *Drosophila* Polyamine Transport

Name: Nicole Barnette

Category: HS

Program: Biomedical Sciences

Abstract:

Polyamines are small ubiquitous cationic molecules that are essential for cell growth and proliferation in addition to other cellular processes including regulation of transcription and chromatin structure, and apoptosis. The intracellular polyamine pool is maintained by a balance of synthesis and import. Polyamine synthesis is well understood; however, how polyamines enter the cell from the extracellular environment is unknown in multicellular eukaryotes. Cancer cells have a high requirement for polyamines due to the need to support rapid growth. In response to drugs that target polyamine synthesis cancer cells up-regulate import via the polyamine transport system (PTS), making the PTS an attractive chemotherapeutic target in combination with drugs that block polyamine synthesis. We have previously demonstrated that *Drosophila* imaginal discs have a PTS with vertebrate-like characteristics. Using both classical mutants and RNAi we have identified CG32000, a P-type ATPase, as a component of the polyamine transport system (PTS) in *Drosophila*. The ortholog of CG32000 in *C. elegans*, *catp-5*, is required for uptake of the toxic polyamine analog, norspermidine, suggesting that the CG32000 ATPase is a conserved component of the polyamine transport system in higher eukaryotes.

Title: Development Of A Mosquito Trap That Uses Sugar Feeding To Detect Eastern Equine Encephalitis Virus

Name: Andrea Bingham

Category: HS

Program: Global Health

Abstract:

Eastern equine encephalomyelitis virus (EEEV) is the most pathogenic arbovirus endemic to the USA. Prevention of infection relies upon transmission surveillance and community-wide prevention measures to prevent the spread of the virus to humans. Many counties in Florida cannot afford the costs associated with thorough active surveillance, including testing of wild birds, sentinel chickens, and mosquito pools. For mosquito surveillance, sample size is extremely important due to low infection rates in mosquito populations. Current methods rely on mosquito pools with no greater than 50 mosquitoes and can be costly and time consuming. We designed a surveillance system that exploits virus secretion in saliva during sugar feeding by mosquitoes. Modified collection chambers of CO₂-baited traps are supplied with honey-coated nucleic acid preservation cards. Mosquitoes that feed upon honey expectorate viral particles onto the card which are then inactivated and preserved by the card. RNA extracted from the cards can then be screened via RT-PCR for arboviruses. This method will allow us to screen more mosquitoes at a time, decreasing the amount of labor and cost. In field trials, we found that 1) the modified traps captured as many females with a similar species distribution as did standard CO₂-baited CDC light traps; 2) nearly all females (91.4%) in traps fed on honey; and 3) traps could run unattended for 3 consecutive days on a single battery and CO₂ tank. Experimental inoculations of EEEV onto honey coated preservation cards demonstrated that viral levels down to 1 PFU were detectable for up to seven days.

Title: Interfacial Mechanical Properties Between Tissue Engineered Cartilage And Bone

Name: Rupak Dua

Category: HS

Program: Biomedical Engineering

Abstract:

Osteoarthritis (OA) is the most common joint-causing disability in humans. Recent efforts in injectable tissue engineering seem to be a promising approach in promoting cartilage repair and regeneration in focal osteochondral defects caused by OA. Specifically, cartilage has been engineered using photopolymerizable, hydrogel-based scaffolding approaches; however a severe limitation of this overall strategy is that there remains a need for enhanced anchorage of the engineered tissue to the underlying subchondral bone. A stable anchor for the scaffold is required which will hold it from being dislodged and also that enable a gradual transition zone with the native tissues over time. For enhanced anchorage of implant and integration with host tissue in situ, previous studies have taken approaches using mechanical fixation, principles of protein biochemistry, signaling pathway regulation, and polymer science; however these approaches have demonstrated limited success and inconsistent results in terms of hydrogel retention within the defect space. We propose that enhance anchorage of the tissue engineered cartilage to underlying bone can be achieved by promoting sub chondral bone in-growth into the implant location from beneath the scaffold thus providing stable anchorage. The primary objective of this study was to take an osteoinductive approach to improving integration of bone to photo-polymerizable hydrogel using hydroxyapatite (HA) nanoparticles and to evaluate the interfacial stresses developed between the tissue engineered cartilage with the engineered bone over a period of 4 weeks. We also assessed the viability of cells in the hydrogel using a commercially available live dead assay (Invitrogen, Carlsbad, CA).

Title: Intrinsic Disorder In Proteins And Their Interaction Hubs As A Novel Tool For Network Medicine

Name: Prerna Malaney

Category: HS

Program: Department Of Pathology And Cell Biology

Abstract:

Authors: Prerna Malaney, Ravi Ramesh Pathak, Bin Xue, Vladimir N. Uversky, Vrushank Davé Since diseases are caused by perturbations in complex biological networks, the current reductionist approach of high-throughput proteome screens have failed to discover effective therapeutic targets. Network medicine exploits systems and network biology at the structural, topological and functional level to target complex molecular networks driving diseases. Herein, utilizing systems level structural informatics, we establish PTEN as an intrinsically disordered protein (IDP). The inherent structural disorder at the PTEN protein level is translated at the hub-level, allowing it to interact with numerous binding partners by shuttling between multiple signaling cascades. Consequently, intrinsic disorder within PTEN nucleates higher order functional networks comprising of vulnerable hubs that are strategically located for targeting by multiple drugs in a given disease network. We posit that such targeting of PTEN and its network-hubs for therapeutic ends emerges as a new paradigm to abrogate pathogenic signaling in cancer and other diseases.

Title: Predictors Of Fielding Performance In Professional Baseball Players

Name: Gerald Mangine

Category: HS

Program: Child, Family, Community Sciences

Abstract:

The ultimate zone rating extrapolation (UZR/150) rates fielding performance by runs saved/cost within a zone of responsibility compared to the league average (150 games) at that position. Spring training anthropometric and performance measures have been previously related to hitting performance, however their relationships with fielding performance measures are unknown. PURPOSE: Examine the relationship between anthropometric and performance measurements on fielding performance in professional baseball players. METHODS: Body mass, lean body mass (LBM), grip strength, 10-yard sprint, pro-agility, and vertical jump mean-(VJMP) and peak-power (VJPP) were collected during spring training over the course of five seasons (2007-11) for professional corner infielders (CI; n=17, fielding opportunities=420.7±307.1), middle infielders (MI; n=14, fielding opportunities=497.3±259.1), and outfielders (OF; n=16, fielding opportunities=227.9±70.9). The relationships between these data and regular season (100-opportunity minimum) fielding statistics were examined using Pearson correlation coefficients, while stepwise regression identified the single-best predictor of UZR/150. RESULTS: Significant correlations ($p < 0.05$) were observed between UZR/150 and body mass ($r = 0.364$), LBM ($r = 0.396$), VJPP ($r = 0.397$), and VJMP ($r = 0.405$). Of these variables, stepwise regression indicated VJMP ($R = 0.405$, $SEE = 14.441$, $p = 0.005$) as the single best predictor for all players, though the addition of pro-agility performance strengthened ($R = 0.496$, $SEE = 13.865$, $p = 0.002$) predictive ability by 8.3%. The best predictor for UZR/150 was body mass for CI ($R = 0.519$, $SEE = 15.364$, $p = 0.033$) and MI ($R = 0.672$, $SEE = 12.331$, $p = 0.009$), while pro-agility time was the best predictor for OF ($R = 0.514$, $SEE = 8.850$, $p = 0.042$). CONCLUSIONS: Spring training measurements of VJMP and agility may predict the defensive run value of a player over the course of a professional baseball season.

Title: The Role Of Ikaros In Regulatory T Cell (Treg) Development And Function In Murine Pancreatic Cancer

Name: Nadine Nelson

Category: HS

Program: Molecular Medicine

Abstract:

Loss of regulatory T cell (Tregs) homeostasis leads to the suppression of anti-tumor immunity in PC tumor-bearing (TB) hosts. Tregs express the Forkhead BoxP3 (FoxP3) gene, critical for their suppressive function. The transcription factor Ikaros is crucial for normal T lymphocyte development and function. Our objective is to identify the role of Ikaros in Treg homeostasis and function in a pancreatic tumor microenvironment. We developed a murine model of PC, isolated splenocytes from TB and control mice and performed flow cytometry and magnetic activated cell sorting (MACS) to immunophenotype and enrich T cells for in vitro analyses. We also used real-time PCR and western blot analyses to evaluate Ikaros and FoxP3 mRNA and protein expression in enriched T cells and whole splenocytes from TB and control mice. Our flow cytometry results showed that CD4⁺ and CD8⁺ T cell percentages were significantly lower in splenocytes from TB mice compared to control. However, there was a significant expansion of Tregs in splenocytes from TB mice. In addition, enriched TB Tregs suppressed antigen-specific CD8⁺T cell responses in a dose-dependent manner, in vitro. Preliminary qRT-PCR results revealed no difference in Ikaros mRNA expression whereas Ikaros protein expression was reduced in TB whole splenocytes compared to control. In enriched TB CD3⁺ T cells, Ikaros protein expression was reduced while FoxP3 protein expression was increased, compared to controls. Our results suggest that the PC microenvironment potentially downregulates Ikaros' expression, which may contribute to the expansion of Tregs and their suppression of CD8⁺T cell (anti-tumor) immune responses.

Title: Molecular Characterization And In Silico Expression Analysis Of A MYB Gene Family In Muscadinia Grapes (*Muscadinia Rotundifolia*).

Name: Lillian Oglesby A. Ananga, V. Gorgev, And V. M. Tsolova

Category: HS

Abstract:

Anthocyanins are the major color pigments in plants. The color of red grapes is fundamentally triggered by the release of anthocyanins from the skin of grape berries. Elucidating transcriptional regulatory networks in muscadine grapes is vital to understanding the molecular and biochemical processes in the flavonoid biosynthesis. To understand anthocyanin biosynthesis mechanism in muscadine grapes, the cDNAs encoding MybA1, MybA2, and MybA3 was isolated from cDNA libraries prepared from skin tissues of muscadine (*Muscadinia rotundifolia*). Research has determined their structures, functions, and evolution in *Arabidopsis*, and rice. However, these transcription factors have not been studied in muscadine grapes, and no genome sequence is yet available. In this study, we have identified MybA1, MybA2, and MybA3 gene sequences from muscadine grapes and confirmed their putative MYB proteins. The putative homologues will also be assigned in *V. vinifera*, and *V. amurensis* based on the phylogenetic tree. Tissue-specific expression pattern analyses have also been used to confirm the predicted homologues. Amino acid sequences of the cDNAs shows high homology to the sequences from related plants. Transcript expressions of MybA1, MybA2, and MybA3 genes are abundant in the red skins cultivars, confirming that these genes have major roles in determination of muscadine skin color. The outcome of this research will not only contribute to understanding of the color variation in muscadine grape berries, which is correlated with the evolutionary events occurring in the MYB gene family of grapes, but it will also strengthen functional genomic studies in North American native grapes.

Title: Factors Impacting Modern Contraceptive Use: An Analysis Of 2011
Uganda Demographic And Health Survey

Name: Mahmooda Pasha

Category: HS

Program: Community And Family Health

Abstract:

Objective: This study aims to understand modern contraceptive use in Uganda with a focus on differentials due to proximate and socioeconomic variables that directly or indirectly impact fertility. Specifically, the questions being investigated include: •How do women who use modern contraception compare to women who do not use modern contraception. •What individual level (age, education, wealth or fertility), cultural level (marriage, ethnicity, religion), and program level characteristics are associated with modern contraceptive use? Methods: This study analyzed a nationally representative sample of 8,674 women of reproductive age(15-49 years) from the 2011 Uganda Demographic and Health Survey (UDHS). The UDHS collects data on fertility, family planning, maternal and child health and demographics. Manipulation of the UDHS using study inclusion and exclusion criteria, created a total sample of 6,401 women. Multivariable logistics regression with crude and adjusted odds ratios and Multivariate Analysis of Variance(MANOVA) followed by discriminant function analysis(DFA) was performed. Results: Age (OR=2.11, CI 95% 1.70, 2.62), education level (OR=2.28, CI 95% 1.79, 2.92), wealth (OR=2.45 CI 95% 1.86, 3.21), total number of children (OR=2.62, CI 95% 1.96, 3.52) and program exposure (OR=1.50, CI 95% 1.28, 1.74) are all strong and significant predictors of modern contraceptive use. A statistically significant Wilks Lambda indicates that contraceptive type differ on age, education and total number of children ($\lambda=.916$, $F(27,8765)=9.85$, P

Title: A Supplement Containing Phosphatidylserine Attenuates Post-Exercise Mood Disturbance And Perception Of Fatigue In Humans

Name: Adam Wells

Category: HS

Program: Child, Family, Community Sciences

Abstract:

Phosphatidylserine (PS) may attenuate the adverse effects of physical fatigue. Therefore, the researchers investigated the effects of a supplement containing $400 \text{ mg} \cdot \text{day}^{-1}$ PS (SUP) for 2 weeks on measures of cognitive function (CF), reaction time (RT), and mood (MD) following an acute exercise stress. It is hypothesized that PS will maintain pre-exercise CF and RT scores, while attenuating post-exercise fatigue. Participants completed two acute bouts of resistance exercise (T1 and T2), separated by two weeks ingestion of SUP or control (CON). Outcome measures were assessed pre and post exercise. When collapsed across groups, a significant decrease in RT performance was seen in the 60-second reaction drill from pre to post exercise at T1. All other RT tests were similar from pre to post exercise at T1. RT was not significantly changed by PS. When collapsed across groups, a significant increase in performance of the SST was seen. A significant increase (8.9% and 7.1%) in the number of correct answers, and a significant decrease (8.0% and 7.5%) in time to answer was seen from pre to post workout at T1 and T2, respectively. A significant increase in total mood score from pre to post workout was observed for CON but not for PS at T2. PS significantly attenuated pre to post exercise perception of fatigue compared to CON. Ingestion of $400 \text{ mg} \cdot \text{day}^{-1}$ of PS for 14-days appears to attenuate post-exercise MD scores and perception of fatigue, but does not affect CF or RT in recreationally trained individuals.

Title: Measurement Of Basic Knowledge Of Alzheimer's Disease In Rural Populations

Name: Lisa Wiese

Category: HS

Program: Nursing

Abstract:

Instruments currently in use to assess knowledge of Alzheimer's disease (AD) are either outdated or directed to persons of high socioeconomic and educational levels, rendering the items irrelevant or incongruent for high-risk populations. The Basic Knowledge of Alzheimer's Disease assessment tool is a 20-item, closed-ended test designed to measure levels of knowledge of AD in rural populations. The questions address knowledge of risk, onset, treatment, progression, and prevention of the disease, as well as symptoms and behaviors associated with AD. The measure was field tested with twenty older adults attending a rural health care clinic in Fayette County, West Virginia, a low income, non-Hispanic white population. Preliminary assessment for validity and internal reliability included completion of a content validity index by health professionals currently working among the target population. Lay leaders examined the tool for language, reading level and cultural appropriateness. Nurse researchers with expertise in cognitive screening for AD edited items for appropriateness and clarity. Phase 2 consisted of administration of the revised survey and a qualitative technique using "think aloud" to illuminate reasons for the chosen answers. Findings included that 90% of those surveyed believed that memory loss is a normal part of aging and 60% thought that persons with AD are unable to understand what they see on television. Eighty percent agreed that earlier detection means earlier treatment. Future research will include further tests of reliability and validity to evaluate worthiness of the tool and administration to a greater and more representative sample of Appalachian residents.

Title: Prospective Solutions And Barriers Of Integrating Sustainable Development Into Local Planning And Management

Name: Mercedes Beaudoin

Category: SS

Program: Public Administration

Abstract:

Local governments have increased activity pursuing sustainable development initiatives for land use across communities and regions. The World Commission on Environment and Development (1987) describes sustainable development as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” The fragmentation of regions, in addition to the myriad of county departments and agencies, poses challenges to achieving more sustainable development for land usage across local governments (Hawkins & Wang, 2011). To aid progress in overcoming these challenges, interview responses from key personnel of Orange County, Florida government were analyzed. The qualitative analysis provided insight on how top level managers conceptualize sustainability, their perceptions and challenges of integrating sustainable development into their department operations and responsibilities, and the prospects for greater regional integration. Notably, these results suggest key barriers to planning and managing more sustainable communities and regions as well as prospective solutions for mitigating these issues.

Title: Quantifying Insider Threat Risks, An Automated Psycholinguistic Approach To Identifying Problem Employees Prior To An Attack

Name: Christopher Brown & Alison Watkins

Category: SS

Abstract:

In our hyperconnected world, insider threat risks continue to grow; with a few clicks of a mouse a disgruntled worker can exfiltrate vast amounts of data, causing great harm to an organization. The organization, however, must grant access to this sensitive information for employees to perform their job duties. Surveillance efforts are always limited as the number of employees with access to sensitive information dwarfs the number of security analysts tasked with monitoring their behavior. Our research efforts explore the role that automated psycholinguistic analysis can play in identifying individuals with troubling personality or behavioral characteristics, allowing security analysts to prioritize monitoring based upon measures of relative risk. Our earliest efforts employed the Five Factor Model (FFM) and successfully differentiated between known criminals and normal corporate email users. We later expanded our efforts by utilizing the "Dark Triad," a group of socially undesirable personality traits. Ultimately we created a new measure, the Psycholinguistic Threat Score (PTS), which focuses on a core set of differentially-weighted word categories that represent an intersection of critical personality traits related to behaviors of concern. Recognizing that a robust risk assessment tool must be able to handle heterogeneous text sources that come from a diverse population with wide differences in word use across age and other demographic variables, we have begun analyzing social media, where our efforts have also shown promise at differentiating between known criminals and normal users.

Title: The Effect Of Xanthan Gum-Based Thickener In A Lagomorph Lung Injury Model

Name: Amanda Domer

Category: SS

Program: Communication Sciences And Disorders

Abstract:

Background: Adding thickeners to liquid is a common treatment for swallowing dysfunction. We hypothesize that aspirated thickened liquid, however, may result in greater lung injury. No study has evaluated the potential hazard of aspirating thickened liquid. Methods: 16 adult male rabbits underwent 3 consecutive days of instillation of thin water or water thickened with xanthan gum-based thickener (1.5 mL/kg per day) through a catheter placed into the trachea. The primary outcome measure was animal survival (days). Secondary measures included: 1) change in animal weight, 2) lung weight post dissection and 3) lung histology measures (pulmonary interstitial congestion (PIC), intra-alveolar hemorrhage (IAH), heterophilic inflammation (HI), and alveolar edema (AE)). Results: 8 out of 8 animals survived for both thin and thickened water groups. The mean change in animal weight was -0.04 kg for thin and -0.14 kg for thickened water ($p > 0.05$). The lung weight was 28.25 kg for thin and 34.38 kg for thickened water ($p < 0.05$). The PIC was 1.0 for thin and 1.75 for thickened water ($p < 0.05$). The IAH was 1.0 for thin and 1.13 for thickened water ($p > 0.05$). The HI was 2.13 for thin and 3.75 for thickened water ($p < 0.05$). The AE was 0.88 for thin and 1.88 for thickened water ($p < 0.05$). Conclusion: The data suggest that aspirated water thickened with xanthan gum has a quantitative histologic effect on the lungs in a lagomorph model. This is the first study to compare the clinical and histologic effects of aspirated thickened water.

Title: Consuming Places: A Bioregional Comparison Of Voluntary Simplicity Lifestyles

Name: Lauren Drakopoulos

Category: SS

Program: Environmental Science, Policy & Geography

Abstract:

Many have argued that in the developed world, consumption has reached unsustainable levels, precipitating social, economic, and environmental decline. Voluntary simplicity is an anti-consumption lifestyle in which practitioners are seeking out an authentic connection to the external world with fulfillment garnered from relationships rather than through the accumulation of material goods. Under the framework of political ecology, this research examined how bioregional characteristics impacted the way in which simplifiers think about and practice simplicity. Using focus groups, in-depth interviews and participant observation, the author did a bioregional comparison of voluntary simplifiers living in the Greater Everglades Bioregion and the Sonoran Desert Bioregion. Within each bioregion, a comparison was also made between adherents residing in an intentional community setting and individuals living non-communally. Bioregional profiles were developed to describe the historic, social, political and geographic landscapes present in each region. Applying a grounded theory approach, participant responses were analyzed within the framework of these profiles. Simplifiers shared some commonalities in their practices and motivations, regardless of bioregion or community setting. Overwhelmingly, participants adopted voluntary simplicity practices out of a sense of moral obligation to improve social and environmental impacts of their lifestyle whereas communal simplifiers foregrounded social issues such as equality and justice, communication, and cooperation. For each study group, practices depended on localized factors such as biophysical characteristics, infrastructure, and available technologies. The social and political cultures of the bioregion were more significant in shaping how simplifiers adapted to these features.

Title: Becoming A Food Citizen: Can Eco-Citizens Realize Their Obligations To Sustainable Consumption Given The Confines Of The Globalized Fish Market?

Name: Nicole Hornung

Category: SS

Program: Political Science

Abstract:

Existing environmental research calls for a sustainable revolution – a political, cultural, and social shift in the way we handle the environment and each other that will allow for humanity to minimize their ecological footprint and pursue the path of sustainability. Ecological citizenship is discussed as a platform to encourage such a revolution by inspiring political engagement by articulating political obligations and rights in an asymmetrical globalized economy. As paradoxical as it may seem, sustainable consumption or buying “green or ethical goods”, has increasingly been tied to activism and is considered an expression of eco citizenship. This paper questions the ability for an ecological citizen to realize his pursuit of sustainable consumerism given the restraints of a globalized market and a convoluted regulation system. My research uses the infrastructure of globally traded fish products to illustrate the limitations that face eco-citizens when trying to buy sustainable food products. Through a comprehensive case study of the current fish market, I intend to illustrate whether or not an eco-citizen is provided with the opportunity to exercise sustainable and ethical principles of consumption. Furthermore, I intend to examine the roles of all players in the fishing industry and outline the collective cooperative measures and reform that is needed to realize sustainability goals in the fish market. By questioning the opportunities available in a market which fulfills our most basic needs, this paper seeks to provide insight into the viability of ecological citizenship in the confines of a competitive, globalized, and convoluted market.

Title: Examining The Factors Influencing Food-Purchasing Decisions Of Orange County Individuals Living In A Food Desert

Name: Lesley Huynh

Category: SS

Program: Public Administration

Abstract:

This study examines and compares the different factors contributing to food-purchasing decisions by Orange County residents living in a food desert, classified by the USDA (2009) as one mile from the nearest large grocery store carrying fresh fruits and vegetables in urban areas. The first stage of this study involved identifying food deserts in Orange County. Two locations were selected due to their close proximity to the University of Central Florida. The second phase entails data collection that will be conducted through the survey method. We will attempt to make connections with local nonprofits, food pantries, and faith based organizations to recruit individuals to participate. Two voluntary focus groups will then be held to delve deeper into the individuals' attitudes on grocery shopping. A mixed-methods concept mapping approach will be used during the focus groups. Concept mapping allows participants to list, organize, and rank their perceptions according to importance resulting in maps that visually display priority areas (Walker et al., 2012). This will allow our research team to create a nexus between food choices and the availability of foods in local stores. The third and final step encompasses analyzing the gathered data and finding common contributing elements. As a result of this study we hope to provide knowledge for policymakers and community leaders in order to increase access to fresh fruits and vegetables through improved policy and grassroots initiatives.

Title: Gender Dynamics From The Arab World: An Intercultural Service Encounter

Name: Marryam Khan

Category: SS

Program: Hospitality

Abstract:

The number of Middle-Eastern travelers to the US substantially increases every year - however, very limited research exists on the customer behavior of this ethnic origin. This research will shed some light upon gender dynamics between Middle-Eastern travelers and employees in the US through an intercultural service encounter within the hospitality industry. Even though Arab countries strive toward the modernization and feminization of Arab families, Arab countries have maintained strict laws regarding segregation of the sexes. In order to have a better understanding of the Middle-Eastern travelers to the US, this research aims to examine the effect of the service-provider's gender on Middle-Eastern customer's emotions and behavioral intentions. In other words, the service-provider's gender will influence the comfort level (emotional response) of the Middle-Eastern traveler and consequently behavioral responses (avoid/approach). Scenario-based online surveys will be created and distributed to the convenient sample of Middle-Eastern descent in Saudi Arabia, Bahrain and United Arab Emirates by using snowball sampling. Expected results will show that when a customer's and service provider's genders are matched (same gender), the customer will show a higher comfort level and approach behaviors (e.g., providing feedback to a service provider). These results can provide a variety of managerial implications that are linked to customer segmentation, intercultural management, country-level strategies and ethnic-based tactics to enhance the Middle-Eastern customer service experience. Lastly, this research will contribute to the cross-cultural studies in hospitality research by encouraging further investigation of the role of gender in service encounters.

Title: The Effects Of Decision Aid Structural Restrictiveness On Cognitive Load, Perceived Usefulness, And Reuse Intention

Name: Irina Malaescu

Category: SS

Program: Accounting

Abstract:

As accounting environments become increasingly automated through information technology support systems, the underlying systems are increasingly restrictive in an effort to direct user behavior and decision making. However, consistent with the theory of technology dominance, restrictive systems have been found to dominate users' decision processes and to have a detrimental effect when decisions require knowledge from outside the system's capability. This study expands upon this research through an examination of users' preferences for more (less) restrictive systems based on their own level of domain knowledge. Incorporating theory on task technology fit, we theorize that users with less knowledge will prefer to be dominated by the system, while users with greater levels of knowledge will prefer a system that provides the user with a level of control over the decision process rather than submitting entirely to the decision aid's control. These theorizations are empirically tested through an experimental design that varies the level of systems restrictiveness across groups of novice and experienced participants. The results confirm that novice (experienced) participants find a highly restrictive system to substantially (minimally) reduce cognitive load, increase (decrease) usefulness of the decision aid, and strengthen (weaken) intention to reuse the system in the future. The results add to understanding the effect of restrictive systems in that the users that are most susceptible to dominance by decision aids are the users most willing to adopt a restrictive system that reduces the effort they must put forth, which reduces the knowledge they accrue from using the system.

Title: Prepaying Less Is Preferable To Saving More: The Role Of Consumer Aversion To Pain Of Prepayment

Name: Chinitorn Nakhata

Category: SS

Program: Marketing

Abstract:

This paper explores why many consumers purchase social coupons (i.e., online coupons that offer a large discount and a long redemption period) featuring a low-implausible face value. When rationally speaking they should not, if their goal of prepaying for a social coupon is to receive large savings. The author proposes that this behavior occurs because consumers consider not only social coupon face value plausibility but also willingness-to-prepay for a social coupon (WTPP-SC) in their social coupon purchasing decision. The author argues that consumer aversion to pain of prepayment generated from being exposed to a social coupon price that exceeds WTPP-SC biases consumer's economic optimal social coupon purchasing decision. This paper also investigates potential moderators that will attenuate or intensify this pain of prepayment aversion effect including semantic cues concreteness (concrete vs. abstract), time pressure (high vs. low vs. no), and social coupon purchase motivation (planned vs. unplanned). For theoretical contributions, most of previous social coupon research focuses on a retailer perspective. This paper adds to this stream of research by providing empirical findings from a consumer perspective. The results of this paper also adds to reference price, semantic cues, time pressure, and planning literature. For managerial contributions, this paper provide insights for retailers who are interested in offering social coupons (or plan to re-offer social coupons) on how consumers make their social coupon purchasing decisions. These insights can be used as guidelines for offering social coupons with appropriate features that will ultimately results in a maximum number of social coupons purchased.

Title: Public Policy, Economic Freedom & Quality Of Life

Name: Boris Nikolaev

Category: SS

Program: Economics

Abstract:

"This study investigates how economic freedom affects individual well-being by examining the relationship between twelve policy components from the Economic Freedom of the World Index and two separate measures for quality of life -- the first one based on the psychological notion of subjective well-being, and the second one on the notion of ""capabilities."" Both structural and reduced form models are used in order to examine which policy instruments relate directly to individual well-being, and which relate to well-being through the growth channel. This approach allows exploring trends in business, trade, fiscal, monetary, investment, financial, property, labor, and corruption freedoms as opposed to most previous studies that look at the aggregate effect of freedom."

Title: Is It Ever Prudent To Form A Global Conglomerate? An Industry Specific Investigation

Name: Garrett Smith

Category: SS

Program: Finance

Abstract:

In spite of the vast amount of literature covering diversification, as well as the effect, both in an industrial and international setting there remains an area left under investigated. Namely, is the effect whether value enhancing or destroying uniform across different industry groups? Prior literature typically assumes the effect (positive or negative) to be uniformly distributed. Using panel data covering a 30 year period (1982-2011) it is found this effect is not homogenous. Twenty-seven portfolios were constructed following Fama and French's thirty portfolio specifications, to investigate the industrial effects. First, the sample was used under a pooled ordinary least squares (OLS) framework showing that different industries respond to the different diversification possibilities differently. The results still exist after controlling for "self-selection" bias using Heckman's Two Stage regression framework. Lastly, a quantile regression technique was also employed to test for the existence of this non-uniform response using both enterprise value and return on assets (ROA).

Title: Transnational Modernity And Primitive Imagery: The Struggle For
Argentina's Black Soul

Name: Prisca Suárez

Category: SS

Program: Institute For The Study Of Latin America

Abstract:

In the first half of the nineteenth century the modernization of the entertainment industry changed the way in which international communities interacted. In Argentina this transnational mass culture often included positive images of blackness. For example, Jazz became so popular that it often contended with Tango for national popularity. Furthermore, many white artists took on nicknames such as “negro” y “morocho” to sound more authentic. What is interesting in the Argentine case is that the nation embraced the influences of this exchange while simultaneously cementing a campaign to that had taken place since the end of the 1900s to whiten the image of Argentina. How was it possible to accept black culture as authentic and modern yet emerge in the contemporary setting as a society that denies the existence of black heritage? Using a content analysis of the uses of language and propaganda associated with blackness in mass culture mediums I argue that despite transnational influences on the progress of blacks, Argentina was able to maintain invisibility by simultaneously embracing yet equating blackness with savagery and a distant past. I apply Stuart Hall’s analysis of hegemony to show dominant discourse precluded the development of racial consciousness and an Afrodescendant identity in Argentina in the twentieth century.

Title: The Relationship Between Voluntary Cough Production And Swallow Safety In Individuals With ALS

Name: Stephanie Watts (Randall)

Category: SS

Program: Communication Sciences And Disorders

Abstract:

Cough is an essential airway protective mechanism and is particularly important for those with disordered swallowing. With the necessity for fine-tuned laryngeal and respiratory coordination for both cough and swallow, we hypothesize that dystussia (disorder of cough) may be predictive of swallowing dysfunction. The aim of this study was to examine the relationship between voluntary cough production and swallow safety in persons with Amyotrophic Lateral Sclerosis (ALS). Physiologic measures of voluntary cough production from 14 individuals with ALS showing no videofluoroscopic evidence of penetration/aspiration were examined and compared to 10 ALS participants with evidence of penetration/aspiration. Group differences were assessed using a one-way ANOVA and a series of Spearman's Rho correlations performed to assess the degree of relationship between voluntary cough measures and airway safety during swallowing. The penetrator/aspirator group presented with lower cough volume acceleration (p

Title: White Matter Networks Indicative Of Alzheimer's Disease
Constructed From Diffusion MRI

Name: William Hahn

Category: SB

Program: Center For Complex Systems & Brain Science

Abstract:

Diffusion Tensor imaging (DTI) is a noninvasive MRI technique that measures the spatial distribution of water diffusion in living tissue. Here we use DTI to detect differences in the structural white matter network of elderly humans with Alzheimer's disease (AD), an age-matched control group, and a group of adults 40-50 years old. In the brain, DTI provides rich contrast between gray matter, where diffusion is largely isotropic, and the relatively anisotropic white matter where water movement is more constrained. Water tends to diffuse along axons rather than perpendicular to axonal membranes, thus allowing DTI mapping of white matter microstructure in vivo. By constructing a three-dimensional diffusion tensor at each volume element and following along the principal diffusion direction, white matter can be mapped from voxel to voxel to create a streamline that is representative of long-range connections in the brain. Combining diffusion tractography and high-resolution structural scans together allows the creation of a graph representation of the white matter connectivity map that serves as structural fingerprint of the brain. Cortical and sub-cortical parcellations become graph nodes and tractography streamlines form the edges between regions. Such a network represents a reduction in the dimensionality of the dataset and allows for graph theoretic analysis. These structural networks provide a new metric which can be used both as a biomarker for AD and as a tool for understanding the cognitive deficits associated with dementia.

Title: Using Community Ecology Theory To Predict Effects Of Agrochemical Mixtures On Aquatic Communities

Name: Neal Halstead

Category: SB

Program: Integrative Biology

Abstract:

Agrochemical pollution has significant impacts on freshwater aquatic communities. Many studies have quantified either direct and/or indirect effects of individual agrochemicals, but less is known about the effects of agrochemical mixtures, a more common real-world scenario. We propose that community ecology theory can predict the combined effects of mixtures of agrochemicals of different types (fertilizer, herbicide, etc.). We predict that fertilizer should mitigate the negative impacts of biocides (herbicide, insecticide, or fungicide) in mixtures by either reducing direct toxicity, or facilitating recovery of impacted populations. Furthermore, we predict that community responses to mixtures of biocides will be an additive effect of the responses to each biocide in isolation. To test our predictions we conducted an outdoor mesocosm experiment with four different agrochemical types, exploring the responses of freshwater pond communities to each agrochemical in isolation and all pairwise mixtures of agrochemicals. Fertilizer decreased the magnitude of the effects of fungicide and insecticide in mixtures, resulting in communities more similar to control treatments than were those of either biocide alone. However, fertilizer and herbicide mixtures resulted in increased periphyton growth and herbivore abundance. Communities in fungicide-insecticide and fungicide-herbicide mixtures were characteristic of the added effects of each agrochemical in isolation. Herbicide-insecticide mixtures exhibited aquatic communities intermediate between those of either biocide. Our results support our predictions of community responses to agrochemical mixtures.

Title: Determine Home Range Size And Habitat Use Of A South Florida Population Of Eastern Indigo Snakes (*Drymarchon Couperi*) Using Radio Telemetry

Name: Steven Jackson & John Herman

Category: SB

Program: Biological Sciences

Abstract:

There is paucity of data pertaining to the basic life history of Eastern Indigo Snakes in south Florida. As a federally threatened species it is important that we gain a better understanding of this species habitat use and home range requirements. Using radio telemetry allows for the tracking of snakes over long periods of time with minimal disturbance. In doing this we are able to look at home range sizes as well as habitat preferences exhibited by individuals found in southern Florida. Similar studies have been conducted with populations in the northern extent of the species range. It is believed that southern populations are more habitat generalist that capable of utilizing additional habitats. It is also likely that there are differences between home range size and use between the northern and southern populations. Preliminary data has shown higher winter activity levels than initially expected as well as the use of habitat that is degraded by anthropogenic impacts and the colonization of exotic plants. There have also been differences in the use of refugia between populations where southern populations use a variety of burrows and structures, while northern populations rely heavily on Gopher Tortoise burrows. The continued tracking of these snakes will allow seasonal comparisons as well as comparison with northern Indigo populations. This research will aid in the development of conservation programs in addition to providing a starting point for future research such as population dynamics and genetics studies.

Title: In Vitro Cytotoxicity Of New Coumarin Derivatives In Human Prostate (PC3) Cancer Cell Line

Name: Moise Joseph, Musiliyu Musa, Veera L. D. Badisa, & Lekan M. Latinwo

Category: SB

Program: Biology

Abstract:

Coumarins are classified as a member of the benzopyrone family of compounds with diverse and interesting biological activities. They have been used as therapeutic agents in the treatment of various diseases. In the present study, the *in vitro* cytotoxic activity of eleven (11) newly synthesized coumarin derivatives was evaluated against human prostate (PC3) cancer cell line at various concentrations (0, 10, 25, 50, 75 and 100 μM) after 48 h treatment. *In vitro* mechanism of the active compounds toxicity was examined by cell cycle analysis, reactive oxygen species (ROS) production, mitochondrial membrane potential (MMP) and expression of Bax protein. The findings indicated that compounds 8-(acetyloxy)-3-[4-(acetyloxy)phenyl]-4-methyl-2-oxo-2H-chromen-7-yl acetate (1), 8-(acetyloxy)-3-[4-(acetyloxy)phenyl]-2-oxo-2H-chromen-7-yl acetate (3) and 8-(acetyloxy)-3-(4-methanesulfonylphenyl)-2-oxo-2H-chromen-7-yl acetate (11) showed cytotoxic activity in PC 3 cell line (LD50 = 22, 35 and 35 μM). Furthermore, compounds (1, 3 and 11) caused significant cells arrest ($p < 0.05$) in -G1 phase, signifying an apoptotic mode of cell death. Compound 11 showed an increase in ROS production, decrease in MMP and increase in Bax protein expression. . These findings suggest that these compounds could serve as new leads for the development of novel synthetic compounds with enhanced anticancer activity.

Title: Chemopreventive Activity Of Fenugreek On The Bimolecular Expression Of Cadmium-Induced Rat Liver Cells

Name: Roy Lyles II C. Odewumi, V. Badisa, L. Latinwo & R. Katam

Category: SB

Program: Biological Sciences

Abstract:

Cadmium is a toxic and carcinogenic metal pollutant that has been known to cause DNA damage. It targets many human organs, mainly lungs, liver, and kidneys. Many chemo-preventive agents have been used against the toxic effect of many heavy metals. Fenugreek, which belongs to the family Leguminosae, is well known for its medicinal value. In our study, the effect of Fenugreek Leaf Extract (FLE) on the viability and total gene expression profile in cadmium treated rat liver cells was evaluated. In CdCl₂ alone treated cells, the viability was reduced to 37.1%, while in the cells pretreated (4 h) with FLE followed by CdCl₂, the viability was increased to 102% respectively, in comparison to the control cells (100%). In CdCl₂ alone treated cells, out of 31,139 genes on the array 61 were up regulated (>2 fold) and 124 were down regulated (≤ -2 fold) respectively, in comparison to control cells. In the cells pretreated with FLE followed by CdCl₂, 181 genes were up regulated (>2 fold) and 161 genes were down regulated (≤ -2 fold). The main pathways that were affected in the above treatment groups were ribosome, TCA cycle and DNA replication. Our results indicated that pretreatment with FLE for 4 h affected gene expression profile in the cadmium treated cells. The alteration in the genes expression in the FLE pretreated cells may be responsible for the protective effect against cadmium toxicity. Therefore, our study suggests that fenugreek leaves can be used to reduce cadmium toxicity.

Title: Fate & Transport Of Nitrate In Internal Water Storage Zones For Bioretention Systems

Name: Thomas Lynn

Category: SB

Program: Civil & Environmental Engineering

Abstract:

Eutrophication is an international issue that causes surface water bodies near urbanized developments to degrade. Excessive nutrient loadings from stormwater runoff, such as nitrate, are known to contribute to eutrophication. A modified bioretention system is a relatively new stormwater treatment technology that was developed to reduce nitrate discharges into surface waters. These systems include an internal water storage zone (IWSZ) which promotes the removal of nitrogen through denitrification. Previous studies evaluated the denitrification efficiency of IWSZ; however, these studies did not determine or quantify the processes that cause denitrification to occur. The objective of this study is to quantify the denitrification performance of IWSZs. Kinetic parameters were determined for many processes that play a role in denitrification. These processes included: denitrification rate, oxygen inhibition, adsorption, abiotic and dispersion.

Title: A LiDAR Evaluation Of 3-Dimensional Patterns Of The Invasive Old World Climbing Fern

Name: Alexis Maldonado

Category: SB

Program: Biology

Abstract:

Old World climbing fern (*Lygodium microphyllum*) is an invasive plant listed by the Florida Exotic Pest Plant Council (FLEPPC) as a category one invader with significant ecological and economic impacts including threatening native plant diversity and the Florida ecosystems that it invades. This species relies on native vegetation for structural support to ascend into the forest canopy and forms dense vegetation mats that cover tree crowns. Once in the forest canopy Old World climbing fern proceeds to alter the 3-dimensional structure of the canopy and subsequently affects the light regime which negatively impacts native plant composition. Airborne LiDAR (LIght Detection And Ranging) technology is a form of remote sensing that measures the elevation of surfaces over a site. This study aimed to determine the efficacy of using LiDAR to examine the biophysical changes induced by an invasive plant on its ecological surroundings. The following variables were derived from LiDAR data: average canopy height, canopy openness, vertical structure diversity, degree of roughness (rugosity), and height of median return energy. These in turn are compared to field measurements of native plant diversity. Results have shown to accurately illustrate the 3-dimensional organization of the forest and how forest structure is altered by climbing vines, with denser invasion sites demonstrating a decrease in canopy openness and altered values for other forest structure characteristics compared to non-invaded sites. The use of this remote sensing technique allows for more broad scale measurements which contribute to more effective monitoring of invasive plants and the systems they invade.

Title: Specimen, Data, And Photo Collection For Herbaria

Name: Kristina Richards

Category: SB

Program: Biology

Abstract:

Herbaria have been important to doctors, researchers, and government officials for centuries. Herbaria, including the University of South Florida Herbarium, seek to obtain specimens, data, and photos of species for inclusion in their internal or online databases. Herbarium information is then used to identify candidates for listing endangered and threatened species, research, and education. There are many missing species in the University of South Florida Herbarium database (ATLAS). This project aims to engage the fieldtrip portion of the Florida Native Plant Society (FNPS), Tarflower chapter, in actively preparing specimens for submission to ATLAS. FNPS coordinates monthly fieldtrips to various natural areas around Central Florida. Specimen collections permits along with a species list of the managed lands will be solicited in advance. The species list for the managed lands will be compared to the ATLAS database to gain an understanding of what species will be collected for specimen submission. FNPS members will venture out to the designated location, and specimens, data, and photos will be collected in the field. Members will help to press the specimens and finally the pressed specimens, data, and photos will be submitted to ATLAS. All specimens, data, and photos will also be submitted to the UCF Herbarium.

Title: Determining Temporal Levels Of POPs In Sediments And Bioaccumulation In Mangroves

Name: Lindsey Schmidt

Category: SB

Program: Environmental Science, Policy & Geography

Abstract:

A sediment core associated with mangroves from Jobos Bay, Puerto Rico collected in 2009 and previously dated by Pb/Cs was analyzed to determine temporal levels of polychlorinated biphenyls (PCBs) and organochlorine pesticides (OCs). Mangrove leaves and roots were collected from the same area in 2013 and analyzed for the same compounds to determine degree of bioaccumulation. PCBs and OCs were extracted from sediments by Soxhlet extraction and from mangrove roots and leaves by ultrasonication with hexane. Compounds were quantified by gas chromatography- mass spectrometry. Several OCs and PCBs were quantified in the sediments and mangrove roots and leaves. Total PCBs, total Endosulfans, total HCHs and total DDTs showed an increasing trend from mid-20th century to 2003 in sediment. Levels of total PCBs and total DDTs during this time frame fell between the ERL (Effect Range Low) and ERM (Effect Range Median) sediment quality assessment values, representing possible to occasional detrimental effects to the aquatic environment. Total DDT and total PCBs bioaccumulated in the roots of *L. racemosa* and *A. germinans* and in the leaves of *R. mangle*, *L. racemosa*, and *A. germinans*.

Title: Synthesis Of Phenyleneethynylene-Doped Poly(p-phenylenebutadiynylene)s For Live Cell Imaging

Name: Tereza Vokatá

Category: SB

Program: Chemistry

Abstract:

Conjugated polymers (CPs) are intrinsically fluorescent materials that have been used for biological labeling, monitoring, and delivery applications. Although poly(p-phenylenebutadiynylene)s (PPBs) exhibit similar photophysical properties to the well-studied poly(p-phenyleneethynylene)s, and PPBs are less susceptible to oxidation due to their higher oxidation potentials, biological imaging applications of PPBs have not been as widely explored due to poor physical properties. We developed a new method to synthesize soluble and high molecular weight PPBs by increasing the backbone flexibility. Exploiting the relative reactivity of aryl halides under competing Sonogashira and Glaser coupling conditions, we introduced a small amount of flexible units along the conjugated backbone. The resulting polymers exhibited improved physical and photophysical properties compared to their conventional (i.e., rigid rod) PPB counterparts. These materials were then successfully fabricated into conjugated polymer nanoparticles and used for fluorescent live cell imaging for the first time.

Title: 5-Terminal Graphene FET With Field-Controlling Electrodes To Improve f_T And f_{MAX}

Name: Chowdhury Al-Amin

Category: SE

Program: Electrical Engineering

Abstract:

Graphene has attracted attention as a promising material for RF FETs due to its outstanding electronic properties like high sheet carrier concentration, saturation velocity and high carrier density modulation by electric field. Current gain cutoff frequency (f_T) and maximum oscillation frequency (f_{MAX}), two metrics of Graphene FET (GFET) RF application efficiency show strong inverse dependency on contact resistance and access resistance and their minimization ensures higher f_T and f_{MAX} . This work proposes a novel GFET with two capacitively coupled field-controlling electrodes (FCE) at the access region independently biased to control the electric field and sheet carrier concentration close to the gate on both sides that reduce the access resistance and serve as low impedance contacts that eventually results in an improved f_T and f_{MAX} than those of conventional 3-terminal GFETs of same geometry. DC and RF characteristics of the proposed device are studied using analytical and numerical techniques and compared with the baseline designs.

Title: Synthesis Of Electroless CuPd Catalyst For Glycerol Hydrogenolysis

Name: Shannon Anderson

Category: SE

Program: Chemical & Biomedical Engineering

Abstract:

The increased production of biodiesel to address our fossil fuel issues has resulted in increased accumulation of glycerol – a biodiesel production by-product. Glycerol is currently being disposed as waste. Interest in its use as a renewable feedstock has been investigated with CuPd catalyst - identified as a feasible catalyst for the hydrogenolysis of glycerol for the production of such products as 1, 2-Propanediol (propylene glycol) for industrial solvents, antifreeze, deicing, food additives, and pharmaceutical industry. Several different approaches are used to synthesize CuPd catalyst including impregnation method, thermal decomposition, and electrolytic deposition and displacement reactions. Unfortunately, there are inherent limitations in many of these approaches – especially with respect to achieving co-deposited materials on nanoparticles. Our hypothesis is that catalysts prepared through electroless deposition on active substrate for dehydration will provide enough catalytic activity to improve glycerol hydrogenolysis. Preliminary results demonstrate feasibility of co-depositing Cu and Pd from the same electroless bath. A CuPd/Al₂O₃ catalyst was prepared through electroless deposition method and its catalytic properties evaluated for the hydrogenolysis of glycerol to propylene glycol. Similarly, catalytic activity of CuPd/Al₂O₃ catalyst prepared through the impregnation method was compared to the electroless CuPd/Al₂O₃ catalyst. Issues related to electroless bath stability, effects of pH, temperature and reducing agent composition will be discussed. The deposited CuPd/Al₂O₃ catalysts are characterized using SEM and EDAX and their results will be presented. A comparison of the hydrogenolysis yield of electroless based catalyst with impregnation based catalyst will be presented.

Title: Propagation Of Corrosion In Dry-Cast Reinforced Concrete Pipes
After Corrosion Initiation

Name: Hariharan Balasubramanian

Category: SE

Program: Engineering, Computer Science & Ocean Engineering

Abstract:

Dry-cast reinforced concrete pipes (D-C-RCP) are used as drainage pipes by the Florida Department of Transportation (FDOT) and other DOTs. Some of these pipes are located in Florida areas where there is a low water table. The time to corrosion initiation period could be shortened by chloride transport due to capillary absorption and diffusion. However moderate or no corrosion has been observed on dry-cast reinforced concrete pipes placed in soils containing high chloride concentration and high moisture conditions. Moreover, the high moisture of the soil could result in low oxygen availability. This investigation is being carried out to better understand the propagation stage on corroding dry-cast reinforced concrete pipes. Experiments were conducted on two different types of D-C-RCP provided by FDOT. These pipes were segmented, instrumented and solution reservoirs installed in horizontal and vertical orientations. Potentiostatic, galvanostatic and migration methods were used to initiate the corrosion. Once the off-potential of the steel reached a value more negative than $-250\text{mV V}_{\text{sce}}$ after 24 hrs. Those specimens considered active were transferred to 95~98% high humidity chamber, then to fully or partially buried in simulated saturated soil. Electrical Impedance spectroscopy was performed to obtain the solution resistance. So far these specimens show no visual signs of corrosion. Reason could be that since both concrete types have high porosity the products are moving through interconnected pore structure. From the preliminary results no increase in R_{papp} in time has been observed. Upon further exposure there could be an increase in R_{papp} .

Title: Cinematographic Shot Classification And Its Application To Complex Event Recognition

Name: Subhabrata Bhattacharya

Category: SE

Program: Computer Engineering

Abstract:

Brief introduction: Complex event detection has emerged as a challenging area of research across computer vision and multimedia community with the abundance of open source video sharing websites such as YouTube, Vimeo, etc. The researchers propose a discriminative representation of a video shot based on its camera motion and demonstrate how this representation can be used for high level multimedia tasks like complex event recognition in consumer videos. Summary of methodology: In this technique, the researchers assume that a dominant projective transformation (homography) exists between subsequent pairs of frames in a given video shot. Using purely image-based methods, homography parameters are computed that serve as coarse indicators of the camera motion. Next, using Lie algebra for the projective group, the researchers map the homography matrices to an intermediate vector space that preserves the intrinsic geometric structure of the transformation. Multiple time series are then constructed from these mappings. Features computed on these time series are used for discriminative classification of video shots. In addition, an in-depth analysis of different features computed from time-series and their impact on the classification of different shots is provided. Results and conclusions: The researchers' empirical evaluations on eight cinematographic shot classes show that this technique performs better than approaches that are based on image-based estimation of camera trajectories. Finally an application of our shot representation for detection of complex events in consumer videos is shown.

Title: Modeling Of Antimony Based Novel Multijunction Solar Cell Having Higher Photon Absorption

Name: Indranil Bhattacharya & Simon Y. Foo

Category: SE

Program: Electrical Engineering

Abstract:

The main challenge in the solar cell industry is making the solar cells more cost effective. Mono and poly-crystalline Si, CdTe, CIGS, Quantum dot, Organic and Dye-sensitized solar cell technologies do not produce high efficiencies. A low bandgap semiconductor generates larger current due to photon absorption over broader spectral region but do not produce high open circuit voltage because it is limited by the dark current of the low bandgap material. This limits them within the Shockley efficiency limit of 30%. The relevant solutions are to increase the efficiency of solar cells, effective spectral splitting by different bandgap semiconductor subcell layers, implementation of III-V direct bandgap optically sensitive and high carrier mobility semiconductors, form better matching (lattice, optical and electrical) between subcell layers, usage of concentrator Fresnel lenses and most importantly reduce the fabrication cost of the epitaxial layers. We have introduced a novel quadruple junction solar cell comprised of AlGaInP/InGaAs/GaSb/InGaSb semiconductor subcell layers. We have simulated the quantum efficiency vs. wavelength, current density vs. voltage, power density vs. voltage and comparative study of photon absorption of our novel design with state of art single junction and multijunction solar cells. Antimony based subcell layers help in higher photon absorption in the IR region. Photonic modeling is done implementing the transfer-matrix method of wave propagation through multilayer structures.

Title: Bracing System Influence In Mitigating Progressive Failure In A Framed Steel Structure

Name: Marcella Carnes

Category: SE

Abstract:

Local failure of one structural component may result in the failure of an adjoining structural component thus leading to disproportionate or complete failure of the structure. This phenomenon is what is known as progressive failure. This paper will present and discuss results of a study conducted to investigate the progressive failure of steel frame structure. In this study, various bracing configurations were considered to determine the nature of load redistribution when the frame lost a key column at ground level. The ground level column was chosen to simulate deliberate man- made disasters such as what occurred at the Alfred P. Murrah Federal Building in Oklahoma City in April 1995. The study shows that bracing arrangements has influence on the alternative load paths once a column loss occurs and thus the prevention of progressive failure.

Title: Using Surface Ambient Methane Concentrations To Estimate Methane Emissions From Landfills

Name: Nemmi Cole

Category: SE

Program: Civil And Environmental Engineering

Abstract:

Most routine methane monitoring techniques employ methods to measure surface concentrations as occurs with NSPS monitoring using Photovac flame Ionization Detector (FID) technology. The direct flux measurement system is the static flux chamber. However, the measurement is only a point measurement. Emerging research has developed techniques whereby modified New Source Performance Standards (NSPS) surface concentration data can be coupled with meteorology data to estimate methane flux for discrete portions of the landfill. The objective is to use ambient air surface concentration measurements (SEM) for CH₄ emissions estimation. An FID will be used to perform the surface monitoring. The standard Gaussian dispersion equations will be used to estimate concentrations at each measurement point caused by point sources (with emissions), coupled with appropriate climate data. The estimated concentrations will be compared to the measured concentration at each receptor and the sum of squares of the residuals will be estimated. The best-fit CH₄ emission rates at all the sources will be obtained by assuming different trial sets of flux values and then calculating the sum of squares of the residuals over all receptors. The sum of the fluxes obtained from the fitting process is the total emissions from the landfill or discrete landfill area. Accurate emission estimations will prove to be valuable for other landfill applications and regulatory decision-making.

Title: Carbon Dioxide Conversion To Carbon Monoxide By Strontium-Doped Lanthanum Cobaltites

Name: Yolanda Daza

Category: SE

Program: Chemical And Biomedical Engineering

Abstract:

More than 6000 MMT of CO₂ were released to the atmosphere in U.S in 2010, which constituted an historical maximum. Major efforts are ongoing to decrease these emissions predominantly by carbon sequestration. We propose an alternative to sequestration by changing the perspective from seeing carbon dioxide as an undesirable fossil fuel burning product, to viewing it as a highly available resource. The approach taken in this study is to use strontium doped lanthanum cobaltites (La_{1-X}Sr_XCoO₃) to convert the carbon dioxide. Five different strontium doped lanthanum cobaltites La_{1-X}Sr_XCoO₃ (0 ≤ X ≤ 1 in steps of 0.25) were synthesized by the pechini synthesis and were examined for their carbon dioxide conversion capabilities with temperature-programmed experiments to evaluate its properties as a carbon dioxide reductor. Results showed that La_{0.75}Sr_{0.25}CoO_{3-δ} was the most active sample in this reaction. It was also determined that carbon dioxide conversion is enhanced at 850 °C when the perovskite has been pretreated in hydrogen at 500 °C.

Title: Campus Rainworks Challenge: A Green Infrastructure Masterplan For
The Downtown Fort Lauderdale Campus

Name: Christina Fermin

Category: SE

Abstract:

This project sought to analyze the existing conditions in order to create a plan that would improve storm water management on the Downtown Fort Lauderdale campus through the installation of green infrastructure.

Title: Biomass In Materials Processing: Using Cassava Leaves To Case-Harden Mild Steel

Name: Renee Gordon K. J. Akinluwade, A. R. Adetunji, P. N. Kalu, & O. O. Adewoye

Category: SE

Program: Mechanical Engineering

Abstract:

Conventional Case-Hardening processes have major drawbacks in being expensive and hazardous to perform. An alternative method is being developed which involves the use of cassava leaves and peels. Cassava contains varying degrees of cyanogenic glucoside (15-1000 mg of HCN per kg of cassava). These cyanogenic glucosides, when hydrolyzed by enzymes, form Hydrogen Cyanide (HCN). To case-harden Steel, cassava leaves are used in a Pack-Cyaniding process that includes a BaCl₂ energizer. Grain refinement will increase the rate of diffusion during Cassava Pack-Cyaniding. A severe plastic deformation technique, triaxial forging, is performed to plastically deform Steel as a means of microstructural refinement and mechanical property optimization suitable for industrial scale production. True strains of approximately 1, 2, and 3 are achieved with low-carbon steel and nitridable-grade steel. Deformed material was characterized by electron backscatter diffraction (EBSD) and vickers microhardness were generated from each compression pass. Additionally, high angle grain boundary percentages increased significantly which is known to be beneficial for grain growth during post deformation recrystallization. This project is in collaboration with Obafemi Awolowo University, located in Nigeria, which is the world's largest producer of cassava. Cassava leaves are generally discarded due to their high level of toxicity. This novel cassava case hardening technique is appealing because it utilizes an indigenous waste product for the improvement of materials, is environmentally friendly, inexpensive, and above all, can be made locally within the developing country. The ultimate goal is to develop an effective method that can be commercialized and adaptable for materials processing internationally.

Title: Solid-state NMR Evidence For β -Hairpin Structure Within MAX8 Designer Peptide Nanofibers

Name: Sarah Leonard Ashley Cormier, Xiaodong Pang, & Maxwell Zimmerman, Huan-Xiang Zhou, Anant Paravastu

Category: SE

Program: Chemical Engineering

Abstract:

The design of self-assembling peptide biomaterials continues to challenge our basic understanding of protein folding and aggregation. MAX8 is one such designer peptide capable of undergoing a triggered folding event following changes in pH, temperature, or ionic strength. In water, MAX8 is known to adopt a random coil conformation. Upon raising the ionic strength, MAX8 is hypothesized to undergo a conformational transition wherein the double proline hinge folds into a closed β -hairpin, initiating nanofiber self-assembly. Here, we use solid-state nuclear magnetic resonance spectroscopy to constrain the 3-dimensional conformation of individual MAX8 monomers within self-assembled nanofiber networks. Methods. MAX8 peptides were synthesized and purified using standard techniques. MAX8 hydrogels were triggered to self-assemble through the addition of DMEM cell culture medium. ^{13}C - ^{13}C 2-dimensional exchange spectroscopy was used to evaluate spatial proximity between the 3rd and 17th amino acid sidechains. ^{13}C - ^{13}C dipolar recoupling measurements were used to quantify the distance between the 3rd and 18th amino acid backbone carbonyl sites. This experiment was repeated on isotopically dilute nanofibers to determine whether the contact is intra- or inter-molecular. Results. NMR spectra show contacts between the 3rd and 17th amino acid sidechains. The spatial proximity between the 3rd and 18th amino acid backbone carbonyls was not affected by isotopic dilution of the nanofiber sample. Spectra also suggest the presence of a minor conformation. Conclusions. NMR results support the hypothesized nanofiber structure consisting of closed β -hairpins aligned into antiparallel β -sheets. The minor conformation may be attributed to either physical crosslinking or nanofiber polymorphism.

Title: Cerberus Robot: The Design, Development, And Evaluation Of Situation Awareness

Name: Konstantinos Mykoniatis

Category: SE

Program: Modeling And Simulation

Abstract:

Cerberus is the subject of a multidisciplinary project covering research opportunities in the fields of electrical and mechanical engineering, modeling and simulation, computer vision, speech and artificial intelligence, as well as human factors psychology. The present work describes the integration of human-robot interaction, specifically the enhancement of situation awareness, into the design, development and evaluation of Cerberus. Through the integration of off-the-shelf components, including iRobot Create, Kinect sensors and a laptop, we were able to build learning algorithms that allowed Cerberus to navigate to a human, detect the human through skeletonization, and identify his/her face. Cerberus also records the image of the human, verbally acknowledges the user's name, and returns to its previous position. To further enhance situation awareness, a user interface was created to collect the name of the user, date and time a person is recognized, height and width of the user, the distance of the recognized user based on robot's position from the home base, room temperature, light conditions, and the number of the people in the field of its view. Results showed successful detection and identification across a variety of human factors (e.g., skin coloration, height, clothing, and eyewear), and environmental conditions. Response times for successful face detection and number of training images have also been collected. Additional work is also being done to further integrate the navigation capabilities with the detection and identification components.

Title: Li-Air Flow Battery With High Rate Discharge Capability

Name: Annadesh Shellikeri, X.J. Chen, Q.Wu , & J.P. Zheng

Category: SE

Program: Electrical And Computer Engineering

Abstract:

Ever since the high energy density characteristic of Li-air technology was demonstrated, this energy storage device has attracted huge attention and has been touted as a potential heir for energy storage in portable devices, electric vehicles and electric grid storage. It is indispensable that the power performance of li-air batteries must be improved if it has to really find applications in electric grid and ultimately in electric vehicles, to accommodate the peak-hour and acceleration demands, respectively. Incorporating the concepts of discharge product dissolution and high oxygen solubility, here we demonstrate a novel li-air semi-fuel cell system with relatively excellent current and power capability. The device was assembled in a sandwich structure, having a configuration of (Li-metal^{anode}/ aprotic electrolyte/separator// Li-ion conducting membrane //circulating aqueous electrolyte ^{O₂ bubbled} /air cathode), where the circulating aqueous electrolyte is saturated with bubbling oxygen while it is stored in external reservoir. The discharge and charge voltages keep at 3.2 V and 3.9 V, respectively, at a current density of 1 mA cm⁻². Even at a current density of 5 mA cm⁻², the discharge and charge voltages are maintained at 1.5 V and 5.2 V, respectively. Preventing pore clogging by electrolyte circulation and overcoming the low oxygen availability by dissolving the oxygen in the aqueous electrolyte can directly contribute to the improvement of rate capability in such a battery and we have successfully demonstrated it using our novel li-air flow battery model.

Title: Unique Solar Occultation Measures Particle Sizes In Saturn's F Ring

Name: Tracy Becker

Category: SP

Program: Physics

Abstract:

Saturn's magnificent rings have been admired and studied since the advent of the telescope, yet the true nature of the rings, their origin, and the many dynamical processes occurring within the system have yet to be fully understood. Interactions between the small particles that constitute the rings resemble the conditions of the early solar system when planets were first forming. Constraints on the abundance and sizes of the particles improve our understanding of the rings and provide insight into the processes involved in planet formation. We use data from the Cassini spacecraft, currently in orbit around Saturn, to characterize the size distribution of particles in Saturn's rings. We analyze a unique solar occultation observed by Cassini's Ultraviolet Imaging Spectrograph (UVIS) during which the Sun was on the edge of the instrument field of view, decreasing the solar signal to $\sim 1\%$ its normal value. As Saturn's F ring passed between the instrument and the Sun, UVIS detected an increase in signal due to diffracted light from the small particles in the ring, rather than a decrease in signal as the particles blocked the Sun. The intensity of the diffracted signal is directly related to the size of the particles responsible for scattering the light. We created a computer model in which we reconstructed the misaligned solar occultation and varied the particle sizes to reproduce the diffraction signal in the Cassini observation. We present a size distribution and upper limits on the abundance of micron-sized particles in Saturn's F ring.

Title: 700-Year Record Of Sea-Surface Temperature Variability Derived From Mg/Ca In Planktonic Foraminifer From The Northern Gulf Of Mexico

Name: Rita Beckhorn

Category: SP

Program: Environmental Science & Policy

Abstract:

Reconstructing late Holocene sea-surface temperature (SST) establishes a baseline for preindustrial climate variability, and is important for models looking at climate response to anthropogenic forcing. The Little Ice Age (LIA) (ca. 1400-1800 AD) was the most recent preindustrial climate change extreme where the northern hemisphere exhibited some of the largest regional cooling since the Last Glacial Maximum (ca. 20,000 yrs BP). However, the magnitude, timing, and spatial extent of the LIA varied among different proxies and climate archives, and LIA seasonality is not well understood. This study reconstructs the first paired climate records of winter, summer, and mean-annual SST in the northern Gulf of Mexico (GOM) that extend through the last -700 years using Magnesium to Calcium ratios (Mg/Ca) of three different planktonic foraminifera species with different seasonal preferences: *Globorotalia truncatulinoides* (non-encrusted variety) and *Globigerinoides ruber* (pink and white varieties) signal winter, summer, and mean-annual SST respectively. The age model is based on 5 radiocarbon dates on mixed planktonic foraminifers. Preliminary results show mean-annual SST has increased 3°C ($\pm 0.77^\circ\text{C}$) since maximum LIA cooling ca. 1860, consistent with the results of a previous study in the GOM (Richey et al., 2009). Winter SST changes show a 2°C ($\pm 1.33^\circ\text{C}$) warming since maximum winter LIA cooling in the 1670's, while summer SSTs show no significant change. GOM mean-annual and winter SST changes are much larger than the global average of less than 1 °C. These preliminary results suggest that colder winters dominated the LIA cooling in the GOM, with no evidence of summer cooling.

Title: Structural Transformation And Aggregation Of Cc-Beta Peptides Into Amyloid Proto-Fibrils

Name: Yuba Bhandari

Category: SP

Program: Physics

Abstract:

The study of amyloid fibrils has important implications in understanding and treatment of various neurodegenerative diseases such as Alzheimer's and Parkinson's. During the formation of amyloid fibrils, peptide polymers manifest fascinating physical behavior by undergoing complicated structural transformations. We examine the behavior of a small engineered peptide called cc-beta, that was designed to mimic the structural changes of the much larger, naturally occurring amyloid beta proteins. Molecular dynamics (MD) simulations are performed to uncover the underlying physics that is responsible for the large scale structural transformations. By using implicit solvent replica exchange MD simulations, we examined the behavior of 12 peptides, initially arranged in four different cc-beta alpha helix trimers. We observed various intermediate stages of aggregation, as well as an organized proto-fibril beta aggregate. We discuss the time evolution and the various interactions involved in the structural transformation.

Title: Development And Validation Of A High-Resolution, Wind-Wave, Tide, And Hurricane Storm Surge Model For The Northern Gulf Of Mexico

Name: Matthew Bilskie

Category: SP

Program: Civil & Environmental Engineering

Abstract:

The northern Gulf of Mexico has a high probability of a major hurricane event due to its location. The wide and flat continental shelf provide near perfect geometry for high water levels under tropical cyclone conditions. The low-lying topography and network of rivers, bays, and marshlands, along with the Intracoastal Waterway, present a complex hydrodynamics system. To study the circulation of this region, a large-scale, high-resolution, wind-wave, tide, and hurricane storm surge model was developed for the northern Gulf of Mexico spanning from Apalachicola, Florida to Mississippi. A 5 meter lidar-derived digital terrain model (DEM) was generated to capture current terrain conditions and resampled to the unstructured finite element mesh via a novel cell area averaging approach. From the DEM, important terrain features (e.g. roadbeds, levees, creeks, etc.) that affect the natural inundation front were extracted and incorporated into the development of the unstructured finite element mesh. In addition, surface roughness parameters were generated from an enhanced parameterization scheme that uses lidar point cloud data to augment look-up tables based on land cover databases. The model is validated by comparison of observed water levels (i.e. water gauge stations and high water marks) to modeled water levels. Also, synthetic Aperture Radar (SAR) was processed to represent snapshots in time of inundation extent during the Deepwater Horizon Oil Spill. The processed SAR data is compared to simulated inundation extent.

Title: An Investigation Into The Volatile Organic Compounds Released From Submerged Remains

Name: Norma Iris Caraballo & Kenneth G. Furton

Category: SP

Program: Chemistry

Abstract:

The manner that a body decomposes, as well as the liberated volatile organic compounds (VOCs), is highly influenced by its environmental surroundings. Previous studies have evaluated the effects of soil on the evolution of VOCs from decomposing remains; however, little to no research has been performed on the effects of water. Furthermore, Osterkamp [1] stated that to improve the performance of water search canines it is important to have a thorough understanding of the VOCs released from submerged remains. Thus, this study used solid-phase microextraction (SPME) coupled to gas chromatography-mass spectrometry (GC-MS) to evaluate the VOCs that were released from submerged remains. Freshly killed human cadaver analogues were immersed in water and the manner in which they decomposed, as well as the liberated VOCs, was monitored over a period of time. The fact that mammalian decomposition is not a solitary event, but rather, a process, makes studies over an extended period of time a critical observation. The results revealed that when comparing the VOCs detected between submerged and non-submerged remains, there were differences in the number of compounds identified, their chemical functionalities, and abundances. Owing to those differences, the scent profiles contrasted between the submerged and non-submerged remains, revealing specific compound(s) that contributed greatly to each environmental variation. With further research, these results could prove to be useful when developing canine training aids for the detection of submerged and non-submerged remains.[1] Osterkamp T. K9 water searches: scent and scent transport considerations. *J Forensic Sci* 2011; 56(4):907-12.

Title: Computational Study Of CO₂ Adsorption Mechanisms In Square Pillared Metal-Organic Materials

Name: Katherine Forrest

Category: SP

Program: Chemistry

Abstract:

Computational examination of carbon dioxide adsorption in two metal-organic materials (MOMs) was undertaken for the purpose of elucidating framework-adsorbate interaction mechanisms. SIFSIX-3-Zn is composed of pyrazine linkers coordinated to Zn²⁺ ions, forming a 2D square net. Nets are layered using SiF₆²⁻ pillars coordinated axially to the metal centers. SIFSIX-2-Cu-i forms a similar structure substituting 4,4'-bipyridylacetylene for the linkers and Cu ions in place of Zn. Interpenetration of molecular scaffolds in the latter structure results in pore sizes similar to those observed in SIFSIX-3-Zn despite the increased linker length. Both MOMs are notable for selectively adsorbing high amounts of CO₂ under moderate conditions. SIFSIX-3-Zn exhibits greater CO₂ selectivity while SIFSIX-2-Cu-i produces higher uptakes. The latter structure is notable for increased energetic favorability of CO₂ adsorption after initial loading. Simulation at temperatures of 273 and 298 K produced isotherms and isosteric heats in good agreement with experiment for both structures and revealed a single adsorption site in both structures. In SIFSIX-3-Zn tight channels allow incoming CO₂ molecules to interact with four SiF₆²⁻ groups simultaneously, resulting in strong interactions while hindering access by non-linear molecules as well as those with lower atomic charge separations. In SIFSIX-2-Cu-i, marginally broader pores and reduced functionality at the adsorption site result in lower specificity for CO₂, while tighter packing of these sites result in increased CO₂ density and permit adsorbent-adsorbent interactions to increase energetic favorability of sorbing incoming molecules.

Title: Variation Of Soil Properties Across Different Habitats In An Ecological Preserve In Boca Raton, FL Using Ground Penetrating Radar

Name: Tania Leung

Category: SP

Program: Geology

Abstract:

The FAU Ecological Preserve, located in Boca Raton, Florida, is a unique environment characterized by three Florida native habitats: tropical hardwood hammock, upland scrub, and dry prairie. These three habitats provide a sanctuary for two species of conservation concern: the burrowing owl and gopher tortoise. Although these habitats are well characterized from an ecological perspective, little is known about how soil characteristics below the surface influence habitat distribution. This study presents preliminary results of soil characterization survey to better understand the role of subsurface physical properties on habitat occurrence. Non-invasive geophysical surveys using ground penetrating radar (GPR) combined with direct coring and soil analysis were conducted in each habitat to characterize subsurface properties. GPR was used to estimate changes in the vertical distribution of electromagnetic (EM) velocity at each site and its potential correspondence to changes in soil physical properties. Common midpoint surveys were used to estimate one dimensional distributions of velocity with depth, while common offset surveys were used to investigate the lateral extent of subsurface stratigraphy across habitats. An array of 50, 100, 200, 250 and 500 MHz antenna frequencies were used to investigate resolution and depth of penetration at each habitat. Direct corings were used to confirm stratigraphic interfaces. Soil samples were collected at each habitat to determine physical properties (e.g., porosity, moisture content, etc.). The results of this study have implications for better understanding the relationship between soil properties and the distribution of native plant species; therefore, assist with efforts for protecting and restoring these important habitats.

Title: Tuning Plasmon And Exciton Excitations In Transition-Metal Doped Arrays Of Noble-Metal Nanochains

Name: Neha Nayyar

Category: SP

Program: Physics

Abstract:

We apply time-dependent density-functional theory to study the absorption spectrum of arrays of nano-scale pure Au chains and those doped with transition metal (TM) atoms. We find that as the number of chains in the array increases the plasmon peak shifts to higher energies and appears in the visible range for an array of three gold chains, each consisting of more than 10 atoms. Doping with TM atoms also leads to formation of additional plasmon peaks close in energy to the main one for the undoped case and is especially pronounced in Ni-doped chains. We trace the origin of the additional modes to the interplay between the collective and local plasmon oscillations in the chains. We also analyze the case of infinite chains in which the bandstructure depends significantly on the interatomic distance. We found that the chains are metallic for bondlength less than 2.3\AA and are semiconducting at larger bondlength. We study the effect of exciton-plasmon interaction in infinite Au wires and finite Au nano chains where the corresponding excitonic and plasmon excitations are especially pronounced.

Title: A Dynamic Feedback Pulse Shaping Mechanism For High Power Chirped Pulse Amplification Laser Systems

Name: Dat Nguyen

Category: SP

Program: Physics

Abstract:

Chirped pulse amplification (CPA) systems are one of the key components in telecommunication systems as well as applications such as laser radar technology and non-thermal ablation that require high power ultrafast sources. That high energy-per-pulse is not directly available from lasers, and consequently the higher pulse peak power regime is accessed via external amplification, specifically chirped pulse amplification. Chirped pulse amplification is currently the state of the art laser technology, which is being employed by all the highest power lasers with output power greater than 100 terawatts. Optical pulses with parabolic temporal intensity profile have been shown to be especially suitable for CPA systems, due to their attractive features such as resistance to optical wave breaking, ability to retain their intensity profile during propagation in gain media, and enhanced linearity in chirp. Their linear chirp also allows efficient and high quality pulse compression to achieve high peak power. In this research, we proposed and demonstrated a dynamic feedback mechanism to realize high power pulses that retains their parabolic shape while exhibiting clean, high contrast, sub-picosecond transform-limited pulses in CPA systems. This method integrates the well-known technique of frequency-resolved optical gating with the liquid crystal on silicon technology, to combine spectral phase modulation with parabolic optical intensity shaping, resulting in 5 times increase in peak power, and 15 dB temporal pedestal suppression. This approach is highly efficient, reliable, versatile, can be applied to any existing CPA systems, and therefore will be of significance in many applications utilizing high power laser pulses.

Title: The Impact Of Long-Range Impurity On Electron Transport In
Metallic Carbon Nanotubes

Name: Ryuichi Tsuchikawa

Category: SP

Program: Physics

Abstract:

Metallic Carbon nanotubes (mCNTs) can be viewed as a one dimensional (1-D) conductor. According to a theory, mCNTs has a unique property that a conventional 1-D conductor does not have. It is called “pseudo-spin conservation.” The effect of this “conservation law” is that the addition of long-range scatterers (such as Coulomb potential) on mCNTs does not add any extra electrical resistance to mCNTs. This is a widely accepted theory in the CNT field, but there has not been any direct experimental measurement to prove this theory even after decades of research because of technical difficulties. We have overcome the difficulties with the combination of our unique transport measurement system and device fabrication method. We have constructed ultra-high vacuum (UHV) measurement system equipped with cesium getter to add long-range scatterers on a mCNT in a controlled manner. Our collaborator at Columbia University provided CNTs suitable for high quality CNT devices needed for the measurements. How the addition of cesium atoms on mCNTs changes the electrical resistance is discussed.

Title: Feeding Behavior Of Loggerhead And Leatherback Sea Turtles: A Study To Understand Longline By Catch

Name: Natasha Warrach

Category: SP

Program: Science

Abstract:

Loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) turtles are two species of sea turtle caught frequently as bycatch in longline fisheries, which use many hooks baited with fish or squid (1). The leatherback feeds primarily on gelatinous zooplankton while the loggerhead is a carnivore. Hence, the attraction and capture of loggerheads is not surprising but the attraction and capture of leatherbacks is somewhat unexpected (2). We investigated the responses of these two species to bait odors in controlled laboratory experiments to better understand releasers of feeding behavior. We measured and compared the responses to olfactory cues. Previous studies quantified and compared feeding responses including increased diving, snapping, gaping, accelerated or diminished swimming speed, and altered swimming behavior (3). The two species share some behavioral components but others were species-specific. Our comparative study highlights the differences in the two species, unexpected similarities, and suggests aspects of their behavior that may predispose them to accidental capture in fisheries.

First Statewide Graduate Student Research Symposium

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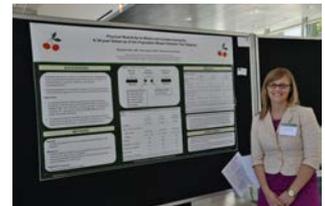
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