Fifth Annual
Florida Atlantic University
Broward Student Research Symposium
March 27, 2015
Davie Campus
8 AM-1 PM
**4th Annual Broward Student Research Symposium Winners-2014**

**Doctoral:** Gesulla Cavanaugh, Mentor: Dr. Dianne Wright  
**Master’s:** AmberRose Reale, Mentor: Dr. Monica Rosselli  
**Undergraduate:** Victor Benavides, Mentor: Dr. Brian Benscoter

**3rd Annual Broward Student Research Symposium Winners-2013**

**Doctoral:** Idaly Velez-Urbe and Brian Dixson, Mentor: Dr. Monica Rosselli, Dr. Ruth Tappen, and Dr. Christine Williams  
**Master’s:** Natalie Korp  Mentor: Dr. Nathan J. Dorn  
**Undergraduate:** Emelia Fischer: Dr. Vladimir Kulic

**2nd Annual Broward Student Research Symposium Winners-2012**

**Doctoral:** Laxmi Laiwani  Mentor: Dr. Monica Rosselli  
**Master’s:** Anais Alfonso, Danielle Fulayter, Racquel Johnson, & Jurna Pierre  Mentor: Dr. Angela Rhone  
**Undergraduate:** Henry Marroquin, Mentor: Mate Thitisawat

**1st Annual Broward Student Research Symposium Winners-2011**

**Doctoral:** Vanessa Hormann, Mentor: Dr. James Kumi Diaka  
**Master’s:** Caroline Efstathion, Mentor: Dr. Nwadiuto Esiobu  
**Undergraduate:** Danielle Medellin, Mentor: Dr. John Baldwin

**2015 Reviewers:**

Dr. Phyllis Bebko-Adjunct, FAU College of Education,  
Judith Tidwell-Faculty, University/College Library  
Elena Lazovskaia-Hall- Faculty, University/College Library  
Neil Linger Faculty, University/College Library  
Shireen Lalla- Broward Campuses Assistant Director Testing & Evaluation, FAU Broward Campuses  
Rich Ackerman-Associate Dean, University/College Library  
Dr. Patricia Willems-FAU College of Education  
Dr. Henning Haupt-Assistant Professor, FAU School of Architecture  
Andrew Dudka-Associate Dean, University/College Library  
Dr. Erik Noonburg-Associate Professor, FAU College of Science

**2015 Judges:**

Dr. Phyllis Bebko-Adjunct, FAU College of Education  
Dr. James Kumi-Diaka, Faculty, FAU College of Science  
Dr. Barbara Ganson-Faculty, FAU College of Arts and Letters  
Dr. Jean Martin Caldieron, Faculty, FAU School of Architecture  
Dr. Don Torok, Associate Dean, FAU College of Education  
Dr. Donna Chamel-Wilk, Director of FAU’s Quality Enhancement Plan  
Dr. Erik Noonburg-Faculty, FAU College of Science  
Dr. Nathan Dorn-Faculty, FAU College of Science  
Dr. Nwadiuto Esiobu-Faculty, FAU College of Science  
Dr. Keith Van De Riet-Faculty, FAU School of Architecture  
Dr. Alberto Fernández-Director Partner Campuses Technology Services  
Judith Tidwell-Faculty, University/College Library  
Andrew Dudka-Associate Dean, University/College Library  
Dr. Henning Haupt-Faculty, FAU School of Architecture  
Dr. Naihua Zhang-Faculty, FAU College of Arts and Letters
Fifth Annual Broward Student Research Symposium Schedule:

8:00-9:40 AM Posters (Authors present 8:30-9:40)

**D1: DOCTORAL POSTER**

D1: DO BILINGUALS EVALUATE EMOTION LADEN WORDS EQUALLY IN BOTH LANGUAGES?

Idaly Velez Uribe, iveleruz@fau.edu, Doctoral Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

**M2-M7: MASTER’S POSTERS**

M2: BEST PRACTICES FOR ASSESSING EARLY WARNING SIGNS OF LIFE-THREATENING PHYSICAL DECOMPENSTATION IN HOSPITALIZED PEDIATRIC PATIENTS

Stephanie Coradin, olufunmilayo Akinpelu, Jasmin Evangelista, Elizabeth Bockstege, scoradin@fau.edu, oakinpelu2014@fau.edu, Graduate Students, Christine E. Lynn College of Nursing. Mentor: Dr. Vanessa Johnson

M3: MIXED-MANAGEMENT STRATEGIES FOR THE REMOVAL OF INVASIVE WILLOW (SALIX CAROLINIANA) IN THE EVERGLADES

Daniel Hagood, dhagood2014@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Environmental Science Program Mentor: Dr. Brian Benscoter

M4: POST-FIRE SUCCESSION AND CARBON STORAGE IN THE NORTHERN EVERGLADES

Lisa Reger, ireger2014@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Brian Benscoter

M5: IMPACT OF VITAMIN C ON GENISTIEN INDUCED APOPTOSIS IN PROSTATE CANCER CELLS

Toluleke Famuyiwa, tfamuyiwa2014@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences, Mentor: Dr. James Kumi-Diaka

M6: EFFECTS OF FIRE ON RIDGE SLOUGH PATTERNING IN THE CENTRAL EVERGLADES

Jacob Dombrowski, jdombrowski2014@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Environmental Science Program Mentor: Dr. Brian Benscoter

M7: INFLUENCE OF BILINGUALISM ON SIMPLE ARITHMETICS

Towhid Nishat, tnishat@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

M8: IMPACT OF WILLOW INVASION ON WATER AND CARBON EXCHANGE IN THE VEGETATION OF A SUBTROPICAL WETLAND

Michelle Budny mbudny2013@fau.edu, Graduate Student, Charles E. Schmidt College of Science, Environmental Science Program Mentor: Dr. Brian Benscoter
**9:45-11 AM Oral Presentations (10 minutes of presentation and 5 minutes of questions)**

**UNDERGRADUATE ORAL PRESENTATIONS: U1-U3, U16**

**9:45-10:00 U1: DIGITAL FABRICATION PROCESSES FOR BIO-MORPHOLOGICAL PANELS**
Blanca Martinez, bmarti55@fau.edu, Undergraduate Student, College of Design and Social Inquiry, School of Architecture. Mentor: Dr. Keith Van de Riet

**10:00-10:15 U2: THE NAVY AND TECHNOLOGY DURING WWII**
Veronica Vergel, vvergel2013@fau.edu, Undergraduate Student, College of Arts and Letters, Department of History. Mentor: Dr. Barbara Ganson

**10:15-10:30 U3: COLOR-SPACE CONSTRUCTION**
Pieter Conradie, Gio Campusano, pconradi@fau.edu, Undergraduate Students, College of Design and Social Inquiry, School of Architecture. Mentor: Dr. Henning Haupt

**10:30-10:45 U16: ALTERATION OF SOIL MICROBIAL METABOLISM BY BRAZILIAN PEPPETREE “Getting To The Roots Of Plant Invasion”**
Roberto Ramirez, Adriana Olivarria, rramirez@fau.edu, Undergraduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Nwadiuto Esiobu

**M1: MASTER’S ORAL PRESENTATION**

**10:45-11 M1: NOVEL IN VITRO PYROELECTRIC CRYSTAL X-RAY GENERATOR AND IN VIVO ELECTRON NANOGENERATOR IN PROSTATE CANCER ADJUVANT THERAPY**
Saheed Oluwasina Oseni, Olumide Adenmosun, Joubin Jebelli, soseni2013@fau.edu, Graduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. James Kumi-Diaka

**10:45-12:00 Posters (Authors present 10:45-12:00)**

**U4-U18 UNDERGRADUATE POSTERS**

**U4: GENETIC IDENTIFICATION OF JUVENILE FRESHWATER APPLE SNAILS**
Estevao Santos, esantos2014@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentors: Dr. John Baldwin and Dr. Nathan Dorn

**U5: CHEMOTHERAPEUTIC EFFECTS OF THE TOPOISOMERASE-I INHIBITOR ENZYME INHIBITOR TOPOTECAN, AND ITS SYNERGISM WITH HIGH DOSAGE VITAMIN C ON PROSTATE CANCER CELLS**
Harris David Goldsmith, HGoldsml1@fau.edu, George Kaldas, Nora Alnoury, Stephanie Khoury, April Schneeloch, Undergraduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. James Kumi-Diaka
U6: THE EFFECT OF LANGUAGE AND ETHNICITY UPON EMPATHY AND EMOTION RECOGNITION
Stephanie Pontillo, Spontill@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

U7: VARIATION IN THE MAJOR HISTOCOMPATIBILITY GENE IS MAINTAINED BY SELECTION IMPOSED BY INFECTIOUS DISEASE
Zizah Jahmila Blair, zblair@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Colin Hughes

U8: MORPHOLOGICAL IDENTIFICATION OF NATIVE AND INVASIVE JUVENILE APPLE SNAILS
Phennatda Polpornvitoon, ppolpornvito2012@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Nathan Dorn

U9: MAXIMIZING COMMUNICATIVE POTENTIAL: A TRILINGUAL TODDLER’S TRANS-LANGUAGE PRACTICES OVER TIME
Genevieve Cann, gcann@fau.edu, Undergraduate Student, College of Education, Department of Curriculum, Culture, and Educational Inquiry. Mentor: Dr. Sabrina Sembiante

U10: PROPAGATION OF CORROSION IN REINFORCED MORTAR SAMPLES BY ANODIC CURRENT APPLICATION
Reid Richardson, rricha56@fau.edu, Undergraduate Student, College of Engineering and Computer Science, Department of Ocean and Mechanical Engineering. Mentor: Dr. Francisco Presuel

U11: ALCOHOL CONSUMPTION HABITS AMONG YOUNG ADULT MARIJUANA SMOKERS
Debora Ferrato; Andres Paz; Joshua Conniff; Brianna Gonzalez, dferrato@fau.edu, Undergraduate Students, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

U12: INHIBITORY PROCESSING IN RELATION TO DRINKING BEHAVIORS: A NEGATIVE IMPACT ON MALE DRINKERS
Joshua Conniff; Andres Paz; Brianna Gonzalez, JConniff@fau.edu, Undergraduate Students, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

U13: TEACHING RESEARCH AT THE ELEMENTARY LEVEL
Tamara Rubinov, Deanna Ferello, Dariana Ramirez, Cynthia Rodas, Caroline Bailey, trubinov2013@fau.edu, deferel1o2014@fau.edu, dramir15@fau.edu, crodas2013@my.fau.edu, bailey2014@fau.edu, Undergraduate Students, College of Education, Department of Teaching & Learning. Mentor: Dr. David Kumar

U14: A CROSS-LINGUISTIC ANALYSIS OF LANGUAGE EFFECTS ON PERSONALITY MEASURES IN SPANISH-ENGLISH BILINGUALS
Katherine Gonzalez, Kgonza24@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli
U15: A CASE STUDENT OF RESEARCH AT HIGH UNIVERSITY’S BRANCH CAMPUS COMMUTER STUDENT PERCEPTIONS AND ATTITUDES REGARDING INSTITUTIONAL CHOICE AND THE DELIVERY OF ACADEMIC PROGRAM VARIETY AND MAJORS
Sharon Bhooshi, sbhooshi2013@fau.edu, Undergraduate Student, College of Education, Department of Educational Leadership and Research Methodology. Mentor: Dr. Dianne Wright

U17: GENOMIC DIVERSITY AND DNA FINGERPRINTS OF THE ORAL WASH MICROBIOME IN SOUTHERN NIGERIAN POPULATIONS
Veronica Molina, VMolina2012@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Nwadiuto Esiobu

U18: VALIDATION OF A NEW PROTOCOL FOR FIELD MEASUREMENTS OF STANDARD METABOLIC RATE IN FISH
Lexie-Ann Holgate, lholgate@my.fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentors: Dr. Timothy Theisen, Adam G. Matulik

ABSTRACTS
U1: DIGITAL FABRICATION PROCESSES FOR BIO-MORPHOLOGICAL PANELS
Blanca Martinez, bmarti55@fau.edu, Undergraduate Student, College of Design and Social Inquiry, School of Architecture. Mentor: Dr. Keith Van de Riet

Purpose: Coastal edges are of major significance for urban economic development, as well as for ecological productivity of marine ecosystems. Conventional seawall edges accommodate for urban development along water ways and increase economic value by providing waterfront access for humans. Unfortunately, they also lower the environmental quality for human activities and inhibit marine ecosystem development and health. Urbanization has resulted in a reduction, and in some cases, a complete loss of natural marine habitat, leading to changes in the foodweb, increased probability of invasion, disturbances in nutrient cycling, and many more direct and indirect changes in the ecosystem. By addressing the material interface (seawalls) between urban development and natural systems, this work seeks to promote a more productive environment for purposes of increasing biodiversity and improving quality of water resources and overall habitat. Method: Through the integration of different fields of knowledge, in this case architecture and biology, diverse digitally fabricated nonstructural panels were designed and fabricated using a combination of traditional and emerging technologies from the field of architectural design. The methodology relied on feedback between digital and analog (hand sketch and modeling) techniques to translate photographic evidence and research data into three-dimensional models. These models were reviewed with mentor (architecture) and collaborator (biological sciences) as part of an ongoing interdisciplinary design process. Finally, these models will be transformed into full-scale prototypes through utilizing CNC (computer numerical control) machines- CNC router, laser cutter, and 3D printer as well as traditional or more conventional construction technique, such as casting. Results: With the guidance and input of Dr. Van de Riet and Jessene Aquino-Thomas, a method for accommodating interdisciplinary research within architectural digital technology was developed, and several panels were explored for the larger body of research. In addition, this research served to
investigate and demonstrate the potential of integrating traditional architectural design tools (analog hand sketch) with current digital architectural technology (computer modeling software, CNC machines). Research assistantship supported by the Fall, 2014 Broward Undergraduate Student Research Award

**U2: THE NAVY AND TECHNOLOGY DURING WWII**
Veronica Vergel, **vvergel2013@fau.edu**, Undergraduate Student, College of Arts and Letters, Department of History. Mentor: Dr. Barbara Ganson

**Purpose:** This project will focus on the affects of technology in the life of navy pilots during WWII. The goal is to show how these new technologies gave navy pilots advantages during WWII. This has been done through an oral history with Theodore Elefter about his time in the navy during WWII. Upon examination of those events it becomes clear that these new technologies greatly helped men in the Navy.

**U3: COLOR-SPACE CONSTRUCTION**
Pieter Conradie, Gio Campusano, **pconradi@fau.edu**, Undergraduate Students, College of Design and Social Inquiry, School of Architecture. Mentor: Dr. Henning Haupt

**Purpose:** The research project is part of a praxis-based inquiry in color, painting and architecture exploring the interrelation of color and space driven by the following questions. Can color conquer a surface, act spatially, build objects in space and construct architectural space? Can color act as a site-specific architectural building element? What do body, sense and ratio know? How large can gestural painting be? Can painting produce movement? The project “Color-Space Construction” is developing Form, Space and Construction of an architectural installation out of painted, two-dimensional, color-space compositions. The painting of color-space and the construction of physical space alternate between painting and construction. Built and painted spaces become a single architectural entity. The visitor finds herself in the situation in which she moves in relation to the built wall structure as in relation to the spatial qualities of the painting. The physical space as bodily perception and color-space as corporeal perception (empathy) are experienced and comprehended simultaneously. The research is praxis-based. Hands-on processes do inform the strategy of inquiries. In case of this project studies in forms of painted compositions, a full-scale mock-up, models of the installation as well of drawings of the installation lead up to the final construction. The research is relevant in regard to the development of architectural design strategies informing the design of future architecture. The engagement in aesthetic, conceptual thinking includes an awareness of the fact that colors - and other architectural elements - are culturally coded and gendered; they exist in relation to a socio-cultural context of time and place. This approach to architecture including color is a physical construction of space and atmosphere resulting from sensory input, cultural knowledge and awareness of context. The result will be installed at the National Conference on the Beginning Design Student selected by the Advanced Spatial Design (ASD) research group at the College of Architecture, University Houston. It will foster the discussion among faculty from across the US teaching foundations and color in architectural design.

**U4: GENETIC IDENTIFICATION OF JUVENILE FRESHWATER APPLE SNAILS**
Estevao Santos, **esantos2014@fau.edu**, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentors: Dr. John Baldwin and Dr. Nathan Dorn

**Purpose:** In many parts of the world invasive species of apple snails (Pomacea spp.) are the culprit of millions of dollars in damage to agriculturally important crops. These snails have since been extensively studied in parts of Asia and South America, but have been less studied in Florida where at least one species has established alongside our native Florida
apple snail (Pomacea paludosa). No methods have been established to distinguish juvenile stages of apple snails, but survival of juvenile stages probably limits population sizes and distributions. Methods: We are developing a genetic technique to distinguish between native and non-native snails from five locations (3 native, 2 non-native). This technique uses custom designed DNA primers along with universal gene primers to amplify sequences of DNA of different lengths that are specific to different species. This technique will bypass DNA sequencing and allow a large number of individuals to be identified simultaneously. As a consequence ecological studies can be performed more efficiently, both from a temporal as well as a financial stand point. Progress: Tissue has been collected from over 40 samples of apple snails and DNA has been extracted from these tissue samples. DNA from selected individual snails has been used for PCR (polymerase chain reaction) in order to amplify a gene of interest, the Cytochrome Oxidase I gene (COI). Currently, not all individual samples are amplifying the target gene, and a troubleshooting of the PCR protocol is underway.

**U5: CHEMOTHERAPEUTIC EFFECTS OF THE ENZYME INHIBITOR TOPOTECAN, AND ITS SYNERGISM WITH HIGH DOSAGE VITAMIN C ON PROSTATE CANCER CELLS**

Harris David Goldsmith, HGoldsm1@fau.edu, George Kalas, Nora Alnoury, Stephanie Khoury, April Schneeloch, Undergraduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. James Kumi-Diaka

**Purpose:** Other than skin cancer, prostate cancer is the most common cancer in American men. The American Cancer Society’s 2015 estimates for prostate cancer in the United States are: approximately 220,800 new cases of prostate cancer, and almost 27,540 deaths. Nearly 1 out of 7 men will be diagnosed with prostate cancer during their lifetime. Topotecan is a chemotherapeutic agent primarily used to treat small cell lung cancer (SCLC). Topotecan works by inhibiting the enzyme topoisomerase I to produce double-strand breaks in DNA. This enzyme is crucial to maintaining the proper shape of DNA when dividing. Topoisomerase I is more prominent in cancer cells due to the rapid reproductive rate. The blockage of this enzyme should induce cell death. There have been studies for over 40 years depicting the effect of vitamin C on cancer cells. Studies portray how high concentration levels of vitamin C inputted directly into the blood stream by intravenous infusion, could lead to death of cancer cells. The anticancer effect of vitamin C involves a chemical reaction that makes hydrogen peroxide, which may lead to cancer cell death. The aim of our current research is to investigate the properties of topotecan and vitamin C as monotherapies, and as a combination treatment on LNCap prostate cancer cells. This study is a follow-up to previous work done on these chemotherapeutic agents. Methods: The LNCap prostate cancer cells were grown in a complete RPMI growth medium, seeded in MTP well plate and cultured at 37ºC, ~5% CO2 for 24-48 to achieve 80-90% confluency. The cytotoxicity of topotecan and Vitamin C alone and in combination with each other was assessed using trypan blue and MTT assays to measure the viability of cells. Results: Based on our results the monotherapies of both the topotecan and vitamin C appear to be more efficacious then combination treatment. Conclusion: There appears to be some kind of antagonistic effect with respect to topotecan and vitamin C. A follow-up study is necessary to ascertain more facts regarding this relationship.

**U6: THE EFFECT OF LANGUAGE AND ETHNICITY UPON EMPATHY AND EMOTION RECOGNITION**

Stephanie Pontillo, Spontill@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

**Purpose:** The mirror neuron system is composed of neurons that are activated upon self-performance of an action and observation of another executing an action. Research suggests that mirror neurons may contribute to the human ability to empathize. The F5 area, in which
the first mirror neurons were found in the primate, is homologous to Broca’s area in the hominid brain. Since the ability to communicate in multiple languages affords an expanded means of interpersonal relations, this could suggest a higher degree of empathy and emotional intelligence. The first area of study focuses on the effect of bi/multilingualism on the ability to discriminate facial emotions as well as empathize. The second area of study focuses on the role of ethnicity on recognition of facial expression and ability empathize.

Method: A Sample of 206 individuals (91 males, 115 females) age 18-45. 128 monolinguals, 60 bilinguals, and 18 trilinguals. Ethnic background included 78 European Americans, 24 African Americans, 43 Hispanic/Latinos, 4 Middle Easterners, 8 Asians, and 2 Caribbean Islanders. Testing comprised of a demographic questionnaire, an alexithymia questionnaire, an emotional recognition task and an interpersonal reactivity index. Results: No significant interactions were found for either language or ethnicity with empathy or emotion recognition. Conclusion: These results suggest that ethnic and language background hold no significant effect upon ability to empathize and recognize emotional expressions. Previous research has found meaningful interactions within language and ethnicity. Past studies infer that it is not the number of languages spoken rather the proficiency to which one speaks that influences the perception and recognition of emotion. To better the present study a question regarding the degree of proficiency in languages should be added to the demographic questionnaire. In addition past research has found that ethnic background influences the ability to recognize emotion and empathize. One argument posits that ethnic ideals (collectivist/Individualist) influences perception of emotion. Studies also show that individuals better recognize facial expressions and empathize with individuals of a homogenous ethnicity. Perhaps improvement can be made by addition of ethnically diverse faces into the emotion recognition task. Upon these alterations the potential for significant findings can be achieved.

U7: VARIATION IN A MAJOR HISTOCOMPATIBILITY GENE IS MAINTAINED BY SELECTION IMPOSED BY INFECTIOUS DISEASE

Zizah Jahmila Blair, zblair@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Colin Hughes

Purpose: Major Histocompatibility (MH) genes play critical roles in mounting adaptive immune responses to infectious diseases and parasites. There are two classes of MH genes: Class I and II; Class II can be further divided into Class II A and Class II B genes; this study focuses on Class II B. Class II B genes are exceptionally variable in sequence. Leading hypotheses propose that this genetic variation is maintained by selection for resistance to pathogens. Since pathogens are constantly evolving to avoid susceptibility to MHC proteins, and since new pathogens regularly enter populations, individuals must protect themselves from a variety of infectious disease organisms. Individuals bearing a variety of MH Class II B are better protected at any one time, and populations harboring a variety are better protected over the long term. This study examines MH Class II B in Centropomus undecimalis, the common Snook. Genes will be sequenced, and their variability quantified as a step toward quantifying the importance of the MH genes in the reproductive success of this fish in Florida. Our approach uses database searches (NCBI), cloning, PCR, and sequencing. Comparison of sequences from single individuals will reveal how many copies of the MH Class II B genes are present. Comparison of sequences among individuals will provide insight on how gene variability is maintained by immune responses to infectious pathogens.

U8: MORPHOLOGICAL IDENTIFICATION OF NATIVE AND INVASIVE JUVENILE APPLE SNAILS

Phennatda Polpornvitoon, ppolpornvito2012@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Nathan Dorn
**Purpose:** The invasive apple snails in the genus Pomacea are considered pests and are listed among the, 100 worst invasive species worldwide because of the herbivorous damage they cause. At least one invasive species (P. maculata) is present in southern Florida along with our native Florida apple snail (P. paludosa). Egg mass characteristics and shell shapes for adults of the two species are distinct but both species start life at small sizes (< 5 mm) and but there are no reported ways to tell them apart. The purpose of this research is to distinguish the juvenile invasive apple snail from the native apple snail through differences in shell morphology. These identification efforts are crucial for identifying snails in the field and studying population, limitation of apple snails. We collected egg masses from five different location (3 from native, 2 from invasive) and juveniles were hatched and reared in the Davie Campus greenhouse. We collected and measured snails through time, so that shell characteristics could be measured for overlapping sizes of both species. After individual measurement most snails were frozen for further analysis of body composition (e.g., shell mass) and some were transferred to the genetics labs for DNA-based identification. We measured shells dimensions of 125 juvenile invasive apple snails and 119 native apple snails six different ways to quantify shell shape characteristics. We then calculated two additional variables (spire length and proportion of the shell length that is spire) from two of the measurements (shell length, SL) and length to the first full suture (S1). Initial analyses indicated that the spire length increases with shell length, for both species, but at different rates for native and invasive apple snails. There was also a difference in spire length between the species. The proportion of the shell length that was spire is greater for invasive snails, but for these sizes the proportion does not and does not change uniformly with shell length. For apple snails between 4 and 10 mm total shell length exotic snails have noticeably larger spires; spires are 10% of the shell length in exotics versus <5% for the native snails. This gives juvenile native snails the appearance of flatter posteriors and may provide a diagnostic characteristic for identifying juvenile apple snails where they co-occur.

**U9: MAXIMIZING COMMUNICATIVE POTENTIAL: A TRILINGUAL TODDLER’S TRANS-LANGUAGING PRACTICES OVER TIME**

Genevieve Cann, gcann@fau.edu, Undergraduate Student, College of Education, Department of Curriculum, Culture, and Educational Inquiry. Mentor: Dr. Sabrina Sembiante

**Purpose:** Although much research has been conducted around children’s bilingual development, we have yet to understand the ways in which young trilingual children use their linguistic resources to develop literacy in their three languages. The developmental sequence from language to literacy skills is more multifaceted for children who function in multiple languages, as they need to develop considerable control over a variety of aspects of each of the linguistic systems (i.e., phonology, vocabulary, syntax, discourse, pragmatics) prior to starting the beginning-to-read process (Ó Laoire, 2006). In this qualitative study, we examine how an emerging English-Finnish-Spanish trilingual toddler harnesses her trilingual skills in her language development over time. Using video recordings of the child’s natural interactions during unstructured activities (i.e., free choice time) in her classroom setting, we captured her language utterances and interactions with peers and teachers over a period of 6 weeks. We conduct our analysis using Garcia’s (2009) idea of Translanguaging as a guiding theory and drawing on Halliday’s (1978) Systemic Functional Linguistics theoretical and analytical framework to explore the functional features of the child’s talk and the manner in which she uses her multiple languages to maximize her communicative potential. Findings shed light on the dynamic ways in which the trilingual toddler accesses and employs different linguistic features from the wide range of her rich linguistic repertoire and how these features formed the basis of her development over time. Using phonological, morphological, and syntactical aspects of Spanish, English, and Finnish, her hybrid language use reveals the systematic and strategic ways in which she communicates with others while making sense of her multilingual world. Her languaging practices provide evidence of the
way that she experiments with the features of each language over time and how she negotiates and conceives the appropriate sociolinguistic functions of each code. Given the paucity of studies of young trilingual children in school settings, particularly with respect to cross-language relationships, these findings have important implications for teachers who serve multilingual children and for our current knowledge base in the field of multilingualism. This research has the potential to expand our understanding about early trilingual and tri/literacy development and to assist early childhood educators to better support the language and literacy development of culturally and linguistically-diverse student populations. References: Ó Laoire, M. (2006). Issues in instructed third language acquisition involving German as a first or second foreign language: Introduction. Zeitschrift für Interkulturellen Fremdsprachenunterricht, 11(1), 1. García, O. 2009. Education, multilingualism and translanguaging in the 21st century. In A. Mohanty, M. Panda, R. Phillipson, & T. Skutnabb-Kangas (Eds.), Multilingual Education for Social Justice: Globalising the local (pp. 128-145). New Delhi: Orient Blackswan. Halliday, M. A. K. (1978). Language as a social semiotic: The social interpretation of language and meaning. London: Edward Arnold.

U10: PROPAGATION OF CORROSION IN REINFORCED MORTAR SAMPLES BY ANODIC CURRENT APPLICATION

Reid Richardson, rricha56@fau.edu, Undergraduate Student, College of Engineering and Computer Science, Department of Ocean and Mechanical Engineering. Mentor: Dr. Francisco Presuel

Purpose: This experiment centered on the comparison between the corrosion rates of reinforcing rebar sections in two different concrete mixes and the resulting surface cracks that occurred. Methods: Different sized chloride reservoirs were placed on the top of concrete samples for variation between mixes. Corrosion propagation was accelerated from the natural rate by applying an anodic current to the samples due to the time constraints of the experiment. Once surface cracks were found, the current was removed and the samples were terminated. Results: It was confirmed that corrosion usually initiated around -450 mV of electrical potential after a certain chloride concentration on the rebar was met. It was also observed that the samples with smaller reservoirs had more erratic resistance measurements compared to larger reservoirs. This is likely due to scattered chlorides between the surface of the concrete and the rebar, resulting in an uneven resistance. After examining the change in mass of the rebar after the termination of samples MD1-3 and MD2-3, it was seen that the minimum mass loss required for surface crack formation was 1.3 grams. It can also be inferred that the mass loss required for surface cracking would increase with an increased reservoir size due to the corrosion products building up over a greater area. Finally, a trend was observed between concrete mix and crack length as well as rebar corrosion length. All of the MD1-3 mix samples resulted in crack lengths of less than 2.5 centimeters while two out of three samples in MD2-3 mix generated crack lengths greater than 6.5 centimeters. Samples in the MD1-7 mix resulted in cracks of ten centimeters which corresponded to their rebar corrosion lengths. There was, however, only one sample terminated for the MD2-7 trails due to lack of surface cracking. Synthesizing these results, it is clear to see that MD1 concrete mix is better at preventing chloride permeation in small reservoirs and therefore sees less corrosion and smaller surface cracks. It is unclear whether it is an overall stronger mix than MD2 due to the lack of comparative results from the MD2-7 trials.
U11: ALCOHOL CONSUMPTION HABITS AMONG YOUNG ADULT MARIJUANA SMOKERS

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Purpose: The purpose of this analysis is to investigate the relationship between marijuana smokers and their alcohol consumption habits. The data described is based off of preliminary baseline data of a 6-month longitudinal research study investigating the relationship between inhibitory processing and alcohol use. In a sample of 189 alcohol-consuming young adult college students, 171 participants (74 males), with a mean age of 20.92±1.85, were divided into four groups relative to their marijuana use: 50 Non-smokers (NS); 42 smokers, but who did not smoke in the previous 6 months (NSP6M); 38 smokers who smoked once or less per month in the previous 6 months (MonthlySP6M); and 41 smokers who smoked once or more per week in the previous 6 months (Weekly+SP6M). A between-subjects one-way ANOVA was performed using each of the four continuous variables measuring previous 6-month alcohol consumption at baseline [i.e., AUQ binge score, AUDIT score, average number of drinks per occasion (Avg#/occasion), and greatest number of drinks consumed on a single occasion (G#on1occasion)], with marijuana use acting as the independent variable. With alpha levels of .01, the ANOVA showed there was a significant effect among marijuana use and AUDIT score, F(3, 167) = 7.44, p < .001, Avg#/occasion, F(3, 167) = 5.88, p = .001, and G#on1occasion, F(3, 167) = 8.80, p < .001. While AUQ binge score was significant, it did not meet Levene’s test of homogeneity of variance. Bonferroni post hoc analysis revealed significant difference of AUDIT scores between NS (M = 5.28, SD = 3.13) and Weekly+P6M (M = 9.15, SD = 3.53), of Avg#/occasion between NS (M = 3.63, SD = 2.36) and Weekly+P6M (M = 6.00, SD = 2.88), and of G#on1occasion between NS (M = 5.78, SD = 3.65) and Weekly+SP6M (M = 9.86, SD = 3.54). The data indicates that frequent marijuana smokers, those who smoke on one or more occasion per week, consume more alcohol within various consuming dimensions than alcohol consumers who do not smoke marijuana.

U12: INHIBITORY PROCESSING IN RELATION TO DRINKING BEHAVIORS: A NEGATIVE IMPACT ON MALE DRINKERS

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Purpose: Alcohol use disorder and other forms of problematic drinking (e.g., binge drinking) have been linked to poor inhibitory functioning. Therefore, the goal of this research study was to investigate the relationship between various drinking behaviors of young adults and three subprocesses of inhibitory processing. Analysis consisted of preliminary baseline data of a 6-month longitudinal research study investigating the relationship between inhibitory processing and alcohol use. One hundred and eighty nine young adults (79 males), ranging from 18-25 years old (M = 20.93, SD = 1.87), were recruited from three undergraduate universities in South Florida, USA. All participants received a $100 incentive: $20 Amazon.com gift card for their baseline assessment and are projected to receive an additional $80 gift card for completion of their follow-up assessment. Participant’s inhibition (via Stop Signal, Go-No Go, and Simon task) and previous 6-month alcohol use were evaluated at baseline. Among male participants, poor performance on the Simon task (i.e., number of incongruent errors, M = 5.03, SD = 4.34) significantly correlated with AUQ binge score (M =23.00, SD = 22.36), r(77) = .27, p = .015, average number of drinks per drinking occasion (M = 5.35, SD = 2.94), r(77) = .22, p = .049, number of drinks required
to intoxication (M = 2.56, SD = 1.00), r(77) = .27, p = .015, and percent of time drunk when drinking (M = 33.23, SD = 29.21), r(77) = .31, p = .005. No significant correlations were evident within the female sample relative to inhibitory processing and drinking behaviors. In sum, the number of incongruent errors increased in parallel to the number of reported drinking behaviors within the male sample. These results suggest a correlation between poor inhibitory control, specific to response interference, and increased levels in alcohol consumption habits in collegiate males.

U13: TEACHING RESEARCH AT THE ELEMENTARY LEVEL
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Purpose: An approach to teaching research suitable at the elementary levels is presented in this paper. The research involved science processes such as hypothesizing, designing an experiment, observing, collecting data, analyzing data, comparing, and arriving at conclusion(s). Review: General principles of absorption by paper towels and published classroom research involving paper towels were reviewed online. Hypothesis: Paper towel brand Sparkle would absorb the most amount of water. Method: The research involved determining which brand of paper towel absorbed the most amount of water. The independent variable was brand of paper towels. Five brands were Bounty, Dollar Store, Scott, Sparkle, and Up & Up. The dependent variable was the amount (ml) of water absorbed. The controls were the size of each sheet of paper towel (20cm x 20cm), amount of water (100 ml) used to soak each piece, amount of time (15 sec) each piece was soaked in water, temperature of water (21C), color of paper towel (all white background). In a group project, each brand was tested 25 times. Results: Paper towel brand Bounty absorbed the most amount of water. Conclusion: The research found that Bounty absorbed the most amount of water, and the hypothesis was rejected. We recommend using a similar paper towel experiment as a pedagogical strategy for teaching research involving science processes at the elementary level.

U14: A CROSS-LINGUISTIC ANALYSIS OF LANGUAGE EFFECTS ON PERSONAILTY MEASURES IN SPANISH-ENGLISH BILINGUALS
Katherine Gonzalez, Kgonza24@fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Psychology. Mentor: Dr. Monica Rosselli

Purpose: The Big Five inventory is a widely used 44-item scale that classifies participants based on five dimensions of personality (openness, extraversion, agreeableness, neuroticism, conscientiousness) with versions available in English and Spanish. Previous studies have found differences in BFI dimensions (extraversion, conscientiousness, and agreeableness) of Spanish-English bilinguals. We asked if Spanish-English bilinguals described themselves differently when answering in different languages. The present study investigated how Spanish-English bilinguals are classified when answering the BFI in both languages. When asked if they felt like a different person in different languages, 41.8% of the participants said yes. In a cross linguistic design, we applied Bennet-Martinez (1999)'s method to a sample of 102 Spanish-English bilinguals that attend Florida Atlantic University as undergraduates and reside in South Florida. We hypothesized that we would find that bilinguals would score significantly different in both languages in the dimensions of extraversion and conscientiousness, with English scores being expected to be significantly higher than Spanish scores. Consistent to the hypothesis, results revealed significantly different scores in Spanish and English in all five dimensions of the BFI; specifically, bilinguals had higher scores in English (F(1,101) = 321.4, p <0.01, η2 = .761) in the
personality dimensions of extraversion, agreeableness, conscientiousness, and openness; however, in the neuroticism dimension, scores were higher in Spanish than in English \( (F(1,101) = 7.126, p = .009, \eta^2 = .066) \). Results were particularly consistent with those reported by Bennet-Martinez (1999), in addition to extraversion and conscientiousness, our participants scored differently in the agreeableness and openness scales, indicating that in our sample, the language effect on the personality measure (BFI) was significantly larger, extending to all personality dimensions. These results emphasize the issue of language in psychological evaluations, with the possibility of language dependence skewing the results for bilingual patients.

**U15: A CASE STUDENT OF RESEARCH AT HIGH UNIVERSITY’S BRANCH CAMPUS COMMUTER STUDENT PERCEPTIONS AND ATTITUDES REGARDING INSTITUTIONAL CHOICE AND THE DELIVERY OF ACADEMIC PROGRAM VARIETY AND MAJORS**

Sharon Bhooshi, sbhooshi2013@fau.edu, Undergraduate Student, College of Education, Department of Educational Leadership and Research Methodology. Mentor: Dr. Dianne Wright

**Purpose:** This research study explored the perceptions and attitudes of commuter students and why they choose certain higher education institutions. More specifically, this research study focuses on commuter student branch campus perspectives. The researchers look at commuting distance and the availability of academic program variety and major in student college application and enrollment choice. Unlike this study, while numerous researchers (e.g., Jackson and Weathersby, 1975; Leslie and Brinkman, 2988; Mcpherson, 1978) have examined tuition in relationship to enrollment and attendance, these earlier researchers do not address the impact of issues such as commuting distance; nor the availability of academic program variety and/or major.

**U16: ALTERATION OF SOIL MICROBIAL METABOLISM BY BRAZILIAN PEPPETREE**

“Getting To The Roots Of Plant Invasion”

Roberto Ramirez, Adriana Olivarria, rramirez@fau.edu, Undergraduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Nwadiuto Esiobu

**Purpose:** In Florida, there is an aggressive, invasive, tree species called the *Schinus terebinthifolius*, or more commonly known as the Brazilian pepper tree (BP). This plant has been proven to be a more successful invader, due to higher growth rates, improved survival, and biomass production. This factors are what make this hybrid so invasive thus labeled a category 1 invasive species. One of the most interesting factors of this specie is that once uprooted from the soil, the soil composition seems to change, inhibiting the growth of native plant species. In this study, 16s rRNA from the BP, native plant, *Persea borbonia* (Red Bay) rhizospheric microbial communities as well as physiological community profiles (CLPP) where extracted and analyzed using 31 different environmental substrates using the BioLog’s multi-substrate ecoplates. The genetic and phenotypic fingerprints of both species were compared by calculating the average metabolic response (AMR) and the community metabolic diversity (CMD). The AMR results for α-D-Lactose, L-Serine, and L-α-Glycerol Phosphate in BP where significantly lowered than those for native plants. The results indicate that this substrates where highly metabolized in the rhizosphere of the native Red Bay plant, and dramatically lowered in the BP rhizosphere. This could indicate that the reason why native plant growth is hindered in soil previously sustaining the BP, is that the BP produces biochemical changes in the soil that inhibit the growth of Arbuscular Mycorrhiza necessary for the health and development of native plants. With this information a new and more efficient method of control could be established against the BP, saving millions of dollars, and the diversity of the beautiful Florida plant life.
U17: GENOMIC DIVERSITY AND DNA FINGERPRINTS OF THE ORAL WASH MICROBIOME IN SOUTHERN NIGERIAN POPULATIONS

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Mentor: Dr. Nwadiuto Esiobu

Purpose: Human oral microbiome plays an important role in the overall cardiovascular and gastro-intestinal health through its activities and interactions with microbiome from other parts of the body. This study is the first to employ metagenomic sequencing of 16S rDNA gene to analyze the oral microbial community of a population from Southern Nigeria. It contrasts genomic diversity of oral wash from a USA population and the West African group with the goal of defining the composition and structure of oral bacteria to understand oral health and inform possible early detection and prediction of disease. Microbial community shifts in healthy subjects, smokers and oral disease samples were also compared. The V3 – V4 hyper-variable regions of 16S rDNA, extracted directly from 20 individuals from 2 populations (USA and Nigeria) and 3 sub-groups, were amplified by PCR and sequenced by Illumina Miseq system using tagged and barcoded primers. This presentation discusses the implication of the high variance in diversity and richness of key bacteria.

U18: VALIDATION OF A NEW PROTOCOL FOR FIELD MEASUREMENTS OF STANDARD METABOLIC RATE IN FISH

Lexie-Ann Holgate, lholgate@my.fau.edu, Undergraduate Student, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. Timothy Theisen, Adam G. Matulik

Purpose: Triiodothyronine (T3) is a hormonal product of the thyroid gland in all vertebrates. T3’s primary responsibility is to regulate metabolism. Out of any other hormone produced in an organism, T3 has the most affect on SMR. The standard metabolic rate in fish is known to have a positive correlation with buildup of heavy metals such as mercury. The objective is to validate that T3 is the regulator of metabolic activities by conducting experiments in carp to see if T3 remains unaffected by changes in temperature or exercise. If this can be proven true, then T3 will be used in later experiments as a stable measuring stick for comparison of mercury deposits in tissues of ectothermic animals. Cyprinuscgarpio (carp) is used in these experiments to confirm the validity of T3 as the primary source of metabolism regulation.

M1: NOVEL IN VITRO PYROELECTRIC CRYSTAL X-RAY GENERATOR AND IN VIVO ELECTRON NANOGENERATOR IN PROSTATE CANCER ADJUVANT THERAPY

Saheed Oluwasina Oseni, Olumide Adenmosun, Joubin Jebelli, soseni2013@fau.edu, Graduate Students, Charles E. Schmidt College of Science, Department of Biological Sciences. Mentor: Dr. James Kumi-Diaka

Purpose: Despite the plethora of research done in the field of prostate cancer therapeutics, prostate cancer is still the second-leading cause of cancer deaths in US men. This disease will be responsible for an estimated 220,800 new cases and 27,540 deaths in 2015, thus adding to the economic burden of the over 2.6 million men currently living with the disease in the United State. Adjuvant therapy has been the recent practice in the field of oncology by a combination of two or more conventional therapies. Radiotherapy is one of the major treatment modalities for cancers in which more than 60% are treated either alone or in combination with chemotherapy, surgery or phytotherapy. However, high dose radiation
therapy is known to also lead to secondary cancers. The aim of this study is to investigate
the ability of a novel pyroelectric crystal generated very low dose x-ray radiation (VLDR) to
enhance the chemotherapeutic and chemotherapeutic effects of two phytochemical
compounds (Genistein and Beta-lapachone).

M2: BEST PRACTICES FOR ASSESSING EARLY WARNING SIGNS OF LIFE-
THREATENING PHYSICAL DECOMPENSTATION IN HOSPITALIZED PEDIATRIC
PATIENTS

Stephanie Coradin, Olufunmilayo Akinpelu, Jasmin Evangelista, Elizabeth Bockstege,
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Nursing. Mentor: Dr. Vanessa Johnson

Purpose: The pediatric population is unique in regards to the characteristic of
decompensating rapidly and progressing to cardiopulmonary arrest with very subtle
indicators. For example, the most current hospital mortality rate ranges from 4.7 % for
children with congenital heart disease to 25 % for children with cardiomyopathies. The
pressing question is, can these rates be decreased with the implementation of an objective
quantitative assessment tool that has been validated in various studies. Purpose: A
systematic review assessing the strategies utilized by Advanced Practice Registered Nurses,
staff nurses, and other clinicians to identify deteriorating pediatric patients in an inpatient
setting. Method: The four team members are in process of conducting a comprehensive
systematic review of literature. The literature will include comparisons of the innovative
Pediatric Early Warning Signs Tool to more commonly used methods of assessment and
intervention. Results: This systematic review should illuminate strengths and limitations of
currently available objective tools and thereby provide a foundation for additional research
studies. Conclusion: Nurse practitioners and other healthcare professionals have a vital role
in providing more accurate and focused assessments and interventions in an expeditious
manner. Therefore, this comparative review will provide information that can facilitate
successful execution of the most effective practices regarding the early identification of
subtle status changes in pediatric patients. This will in turn greatly improve overall patient
outcomes. This systematic review is expected to yield comparative effectiveness information
and strategies that may help to inform practice and policy changes.

M3: MIXED-MANAGEMENT STRATEGIES FOR THE REMOVAL OF INVASIVE WILLOW
(SALIX CAROLINIANA) IN THE EVERGLADES

Daniel Hagood, dhagood2014@fau.edu, Graduate Student, Charles E. Schmidt College
of Science, Environmental Science Program Mentor: Dr. Brian Benscoter

Purpose: Woody encroachment, or “shrubification”, is a pervasive problem in many grass-
dominated ecosystems, including the sawgrass (Cladium jamaicense)-dominated
communities of the Everglades where wetland drying has facilitated expansion of willow
(Salix caroliniana). Rapid resprouting and resistance to burning are common challenges to
current management methods. Willow is capable of quickly regrowing from cuttings or
stumps and herbicide treatments leave standing dead biomass that can facilitate reinvasion
of willow or other invasive plants (e.g., Lygodium) rather than recovery of sawgrass. While
intense fires are capable of spreading through willow stands, the conditions necessary are
often in conflict with other land management or burn prescription guidelines. Land managers
need effective strategies for removing willow and restoring native habitat, particularly along
wildland-urban interfaces where high intensity burning is not an option. I will assess the
effectiveness of mixed-management strategies on willow removal and habitat recovery at
the A.R.M. Loxahatchee National Wildlife Refuge. Replicate plots will be treated with
herbicide, manual cutting, or no treatment (control) with subsequent prescribed burning.
Area burned and vegetation recovery will then be measured to evaluate the effectiveness of
the management strategies. I anticipate the combination of herbicide and fire will be most effective for willow removal and native habitat recovery because the herbicide-killed plants will provide fuel conditions more conducive to sustained burning of the standing biomass, preventing willow resprouting and minimizing reinvasion. The results of this study will provide valuable information for the use of prescribed fire in the restoration and management of vegetation communities of the Everglades.

**M4: POST-FIRE SUCCESSION AND CARBON STORAGE IN THE NORTHERN EVERGLADES**

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**Purpose:** Fire plays a key role in the ecology of the Everglades and is a ubiquitous tool for managing the structure, function, and ecosystem services of the Greater Everglades watershed. Because fire historically shaped the Everglades’ landscape, successful restoration relies on the implementation of fire management practices. This research will provide documentation of the trajectory of plant community succession as well as aboveground carbon storage post-fire in sawgrass marshes of the A.R.M Loxahatchee National Wildlife Refuge. Methods: Historical fire records were used to select sites along a chronosequence of time since the most recent prescribed fire. Sites were constrained to the northern part of the Refuge to minimize effects of regional hydrology and distributed between areas with relatively high and low phosphorous load to evaluate P effects on recovery trajectory. Vegetation surveys were performed in four transects consisting of five 1m x 1m plots at each site to assess the pattern of plant community compositional and structural change through succession. Aboveground plant biomass and leaf area were also non-destructively estimated in each plot, with additional destructively harvested samples for validation and to analyze total foliar C and N. Surface soil samples were collected to quantify the organic matter, C, N, and P content across the chronosequence. Results: Results of this study will provide a greater understanding of the post-fire successional sequence and aboveground carbon storage by Everglades sawgrass communities. Conclusions: These results will quantify the effectiveness of fire management practices in the maintenance and restoration of quality habitat in the northern Everglades.

**M5: IMPACT OF VITAMIN C ON GENISTIEN INDUCED APOPTOSIS IN PROSTATE CANCER CELLS**

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**Purpose:** Prostate Cancer, in the absence of skin cancer, is the most prevalent type of cancer found in the male population. Reactive Oxygen Species (ROS) can promote cancer cell proliferation when they are at elevated levels. Vitamin C is a water-soluble antioxidant capable of inhibiting the formation of ROS. Genistein, an isoflavone found in plants, also possesses the ability to inhibit ROS formation. This study aims to determine the potential therapeutic synergy between genistein and vitamin C and investigate mechanism of action of genistein and/or vitamin C. Methods: Trypan blue assay was carried out to know the % of viable cells. Varying concentrations of genistein with a constant concentration of Vitamin C was used to treat LNCaP cells. After treatment of the cells with genistein and Vitamin C, MTT assay of the cancer cells was performed and absorbance read through an ELISA reader. This gives the values needed for interpreting cell viability after treatment. A statistical analysis was performed to determine whether the obtained results are statistically significant. Results: The results obtained from our experiments are inconclusive with regards to the impact of Vitamin C on apoptotic cancer cell death following genistein treatment. However the combination of genistein and vitamin C was more efficient in tumor suppression than
when the drugs were given separately. Conclusion: This study suggest that treatment of prostate cancer using genistein can be enhanced by adjuvant treatment with vitamin C. This study is of potential clinical success in reducing the cell death by necrosis.

**M6: EFFECTS OF FIRE ON RIDGE SLOUGH PATTERNING IN THE CENTRAL EVERGLADES**

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**Purpose:** Wildfire plays a crucial role in the maintenance of landscape heterogeneity and patterning, particularly in the Florida Everglades. The frequent fires in the marsh wetlands typically remove much of the standing biomass and sometimes the surface soil layer, catalyzing plant community change. As the plants recover, the accumulated aboveground biomass contributes to fuel loading for future fires. Feedback loops between environmental and vegetation conditions help maintain the characteristic ridge and slough landscape of the Everglades. In this study, I will investigate the influence of fire history and behavior on ridge-slough patterning in the central Everglades. Methods: I will use historical fire and hydrologic data to identify sites with frequent vs infrequent fire under different hydroperiods. Using survey transects, I will quantify the distribution of soil surface elevations and vegetation composition, as well as shape of ridge landforms. Expected results: These patterns will be used to assess fire’s role in the maintenance of ridge-slough patterning. Quantifying the feedbacks responsible for maintenance of landscape heterogeneity is critical in the restoration and management of the Florida Everglades.

**M7: INFLUENCE OF BILINGUALISM ON SIMPLE ARITHMETICS**

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**Purpose:** It has been widely hypothesized that while doing arithmetic, individuals use two distinct routes for phonological output. A direct route is used for exact arithmetic which is language dependent, while an indirect route is used during arithmetic approximation and thought to be language independent. The arithmetic double route has been incorporated on the triple code model that consists of Visual Arabic code for identifying string of digits, magnitude code for knowledge in numeral quantities, and verbal code for rote arithmetic fact. Our goal is to investigate whether language experience has an effect on the processing of exact/approximation math using bilingual participants who have access to two languages, using a theoretical arithmetic processing model, which have been validated across many studies. We have measured the 2 groups (monolinguals/bilingual) processing speed to complete the 2 tasks (Exact/Approximation) in 2 codes (Arabic digit/Verbal). We hypothesized a faster reaction time in exact arithmetic task in comparison to approximation in accordance with the triple code model. We also expected a main effect for the task (Exact vs. Approximation) independent of the input code when the stimulus was presented in either Arabic digit and/or verbal codes. Our results showed that exact arithmetic is faster than approximation of arithmetic facts in all codes supporting earlier theories. Also, there was no significant difference in processing speed between monolinguals and bilinguals when performing the arithmetic task in either Arabic and/or verbal codes. In addition, our investigation would suggest a modification to the triple code model when interpreting arithmetic facts in verbal code due to interference of two languages with bilingual participants. Addition to the model can be suggested when the stimulus is expressed in verbal code for visual identification, which may cause interference in bilingual that may lead to first language advantage due to language experience.
Carolina willow (Salix caroliniana) is native to the Florida wetlands, commonly found on drier landforms like levees and tree islands. Shortened periods of inundation due to water management have led to the encroachment and expansion of shrubs in sawgrass (Cladium jamaicense) marsh communities. Morphologically and physiologically differences between sawgrass and willow lead to possible consequences for microhabitat conditions and ecosystem function such as decreasing temperatures and light availability and changing primary productivity. Willow is often assumed to have greater rates of transpiration, affecting wetland water management, and may have differences in photosynthesis and carbon exchange. However, the ecophysiological impact of the willow invasion has not been quantified. We assessed differences in plant water and carbon exchange between willow and sawgrass in an impounded sawgrass peatland. Stomatal conductance ($g_s$) and net CO2 exchange ($A_{net}$; photosynthesis and autotrophic respiration) were measured on fully expanded, non-damaged leaves of sawgrass and willow using a portable infrared gas analyzer. Willow had higher rates of $g_s$ and $A_{net}$ than sawgrass. However, sawgrass had greater intrinsic water use efficiency (WUE) than willow. This suggests that willow is capable of greater gas exchange and carbon assimilation than sawgrass but requires more water. The results of this study will provide a better understanding of ecophysiological changes within marsh communities with shrub expansion, which will have cascading impacts on soil carbon storage, microclimate, and water quality and availability. Understanding the implications of willow expansion will improve landscape models of wetland water and carbon exchange and inform water management decisions.

D1: DO BILINGUALS EVALUATE EMOTION LADEN WORDS EQUALLY IN BOTH LANGUAGES?

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Purpose: Bilinguals commonly report experiencing emotions differently depending on which language are they speaking. Emotionally loaded words were expected to be appraised differently in first versus second language in a sample of Spanish-English bilinguals (n=117). English (L2) ratings were subtracted from Spanish (L1) ratings; the resulted scores were used as dependent variable in the analyses. Three categories of words (positive, negative and taboo) were appraised in both languages (English and Spanish) and two sensory modalities (Visual and auditory). The differences in valence scores in Spanish (L1) and English (L2) were expected to be significantly higher when presented aurally than when presented visually. Additionally, taboo words were expected to yield larger differential scores than negative and positive words. The 2 X 3 general linear model (GLM) revealed no significant effect of sensory modality but a significant effect of word type. Additional analyses of the influence of language and sensory modality within each word category resulted in significant differences in ratings between languages. Positive word ratings were higher (more positive) in English than in Spanish. Similarly, negative words were judged as more negative in English than in Spanish. However, taboo words were rated as more negative in Spanish than in English. Additionally, the influence of a selected set of predictors (Age of acquisition of English, percent of life lived in the United States, English proficiency, Spanish proficiency and, Latino and United States cultural identities) over the differential scores was tested in multiple regression models. Age of acquisition of English and United States cultural identity were expected to be the highest contributing variables to the
variance in the dependent variables. Regression models were significant only for the visual positive, visual negative and auditory positive categories.

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