



## The Student Research & Artistic Initiative Program

A Compendium of Undergraduate Research Projects: 2005-2009  
The Honors College at Florida International University, Miami, Florida

# *Spes Scientia Facultas*

*hope, knowledge, opportunity*

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## Mission Statement of the Honors College

The mission of The Honors College is to provide an intellectual community where outstanding students and dedicated teachers and scholars pursue intellectual curiosity, critical thinking, and personal and professional enrichment marked by excellence in all engagements. It is guided by the FIU Value Statement, which espouses a commitment to: freedom of thought and expression; excellence in the pursuit, generation, dissemination, and application of knowledge; respect for the dignity of the individual; respect for the environment; honesty, integrity, and truth; diversity; and service excellence.

### The aims of The Honors College are to:

Attract the "best and brightest" students from within and outside FIU and provide them a high quality trans-disciplinary educational experience.

Enable students to develop critical, integrative, and creative thinking skills and to make connections among domains of knowledge.

Facilitate engagement of students in applied and other research collaboration with the finest research faculty as learners and teachers in the scholarly community.

Provide mentoring and internship experiences to complement and enrich the knowledge acquired in the classroom and through research collaboration.

Offer scope for service learning engagement as a way to build bridges between domains of knowledge and service activity that enhances civic responsibility.

Foster a sense of community among students and faculty as citizens with special talents and responsibilities to self, the scholarly community, and society.



**Honors College**

FLORIDA INTERNATIONAL UNIVERSITY

## The SRAI Program

Founded in 2005, the SRAI Program is an academic catapult. By pairing interested students with faculty experts, the SRAI Program increases knowledge about opportunities in the disciplines, builds student confidence, strengthens the resume, and secures competitive advantages for graduate school and the workforce. The SRAI Program has strong affiliations with the Florida Collegiate Honors Council, The National Collegiate Honors Council, and the National Council of Undergraduate Research.

### **How does it work?**

The Student Research & Artistic Initiatives (SRAI) Program in the Honors College provides opportunities to Honors College students by pairing them for projects with faculty experts at FIU, and exhibiting those projects at an annual research conference at FIU. The Program provides opportunities for supervised research and formal creative projects to students from all academic areas. SRAI draws on a large pool of faculty talent and physical resources that already exist throughout the University. The SRAI “fourth year option” has strict requirements and deadlines that must be adhered to.

### **How do students get involved in SRAI?**

Students interested in pursuing a faculty supervised research or creative project can begin by browsing the online Database of Affiliates on the SRAI website at <http://honors.fiu.edu/srai>, or by simply walking into the SRAI Research Center at UP during posted operating hours to meet with a SRAI advisor. The online database is a complete listing of current Research Affiliates with their areas of interest or specialization. You may also contact one of the SRAI personnel listed on the website to make an appointment before coming to the office.

### **Does it work?**

Yes. Hundreds of Honors College Students enrolled in the Student Research & Artistic Initiatives Program have presented at major juried external conferences at the state and national level. Since its inception, over 300 students have presented at the annual SRAI Research Conference at the University Park Campus of FIU. And many of those have gone on to present at state, regional, national, and international conferences.

### **Past External conferences have included:**

- The National Collegiate Honors Council Conference
- The National Council of Undergraduate Research National Conference
- The Florida Collegiate Honors Council Conference
- The American Chemical Society National Meeting
- The Weinstein Conference in Cardiac Development
- The American Chemical Association National Meeting
- The Association for Research in Vision & Ophthalmology Conference
- The American Academy of Forensic Sciences Conference
- The American Society of Microbiology's 106th General Meeting
- The Society for Research on Identity Formation National Conference
- The Annual Hawaii International Conference on Arts and Humanities
- The U.S. Dept. of Energy & National Renewable Energy Lab Solar Decathlon
- The Biomedical & Comparative Immunology Symposium
- The Southeast Undergraduate Cell Science Research Symposium

## About the Director

John S. Kneski, Director 2005-2010  
Associate Dean & Senior Fellow  
The Honors College at FIU

John Kneski was born in New York in 1964. Before coming to Miami, Kneski worked in construction on Long Island where he developed a keen interest in architecture. During that time, he also played saxophone in the Hamptons Music Festival orchestra, part of that time recording under the direction of Teo Macero, who had previously produced works by Duke Ellington, Ella Fitzgerald, Thelonious Monk, Count Basie, Tony Bennett, and Charlie Byrd for Columbia. A professional Bachelor of Architecture degree with a minor in fine art from the University of Miami in 1987 was the culmination of studies abroad at the Uniwersytet Jagiellonski in Cracow, Poland, the Istituto Universitario di Architettura di Venezia, Italy, and at the Architectural Association in London, England. Associate Dean Kneski received a terminal degree (M.Arch II.) in architecture from Syracuse University after research conducted in Florence. He then worked in the firm of Norman Jaffe & Associates Architects in New York before establishing a furniture design practice and gallery in Coral Gables, which received much national attention. He is a member of the American Institute of Architects and is licensed by the State of Florida Board of Architecture and Interior Design.

Associate Dean Kneski teaches in the Honors College, the School of Architecture, the College of Arts & Sciences, and is an affiliated faculty member in the European Studies Program at FIU. Although he has taught over thirty different courses at FIU, he is most passionate about the course he created called Beauty, Beliefs, and Power in the Mediterranean. He oversees the Honors College study abroad programs - directing the Italy Program since 1998 - and the Honors College undergraduate research program called SRAI. He has represented the Honors College at the state level as the President of the Florida Collegiate Honors Council, which is comprised of over thirty member institutions; and, currently, FIU at the national level as an elected member of the Council on Undergraduate Research in Washington DC, which represents over 900 colleges and universities.

In his career as an architect and preservationist, Prof. Kneski has been published in various journals including *Metropolis*, *Preservation Today*, and *Architecture*. He is very proud of being the author of the *Historic Survey & Contributing Structures Report* that led to the creation of Miami's fourth historic district, Spring Garden. He was the editor of the *Architecture Program Report to NAAB*, used in the original accreditation of the Master of Architecture Degree Program at FIU, and was the Editor of the *Honors Excellence Paper Series*, which has included notable lecturers such as the architect Robert A. M. Stern, and the annual university publication *With Honors* from 2001 to 2007. He is currently completing a book on botanical and anthropological studies conducted in New York by Thomas Jefferson.

# *Spec Scientia Facultas*

hope, knowledge, opportunity

We could think of no better name for the first compendium of abstracts from the SRAI program than the motto of the university itself, “Spec Scientia Facultas.” Hope, knowledge, and opportunity are what the SRAI program is all about; the hope that graduates will make a better world with the training that they have received at Florida International University, the thirst to create new knowledge and to share that knowledge with the national and international community of scholars, and the opportunity to examine the world through research at FIU and the opportunity to make a difference in the world. These are our goals in the Honors College SRAI Program.

*Research is formalized curiosity. It is poking and prying with a purpose. It is a seeking that he who wishes may know the cosmic secrets of the world and that they dwell therein.*

Zora Neale Hurston (1891–1960)  
novelist, short story writer, folklorist, playwright and anthropologist





Student Research & Artistic Initiative Program  
Compendium of Undergraduate Research Projects: 2005-2009  
The Honors College at Florida International University, Miami, Florida

SRAI Research Mentors: 2005-2009

Irma Alonso  
Daniel Alvarez  
Kathryn Anderson  
Lorraine Bahrack  
Mahadev Bhat  
Charles H. Bigger  
Richard Bone  
Cherly Carter  
Manual Carvajal  
David Chatfield  
Peter J. Clarke  
Helen Cornely  
Eric Crumpler  
Gwyn Davies  
Leslie DeChurch  
Charmaine DeFrancesco  
Grenville Draper  
Leonard Elbaum  
J.C. Espinoa  
Damian Fernandez  
Kenneth G. Furton  
Devon Grahman  
Dona Greenwood  
Ivelaw Griffith  
Orlando Gutierrez-Boronat  
Lindsay Ham  
Peter Hargitai  
Kenneth I. Henley  
Marilyn Hoder-Salmon  
Robert Hogner  
Krish Jayachandran  
Valeria Jones  
Suman Kakar  
Leung Kim  
Janine King  
John Kneski  
Lidia Kos  
William Kurtines  
Shonali Laha  
John T. Landrum  
Watson Lees  
Felice Lifshitz  
Gary Lund  
Peter Machonis

Bill Maguire  
Robert Malow  
Anthony McGoron  
Sharlita Millington  
DeEtta Mills  
Mathew Mirow  
Rajamani Narayanan  
Chris Nuemann  
Kevin O'Neil  
Kevin O'Shea  
Roberto Panepucci  
Jack Parker  
Mary Lou Pfeiffer  
Patricia Price  
Elisabeth Prugl  
Darden Pyron  
Kathleen Rein  
Jim Riach  
Christopher Rice  
William Ritzi  
Ana Roc  
Tonette Rocco  
Deodutta Roy  
S. Masoud Sadjadi  
Bennett Schwartz  
Kateel Shetty  
Ju Sun  
Krishnamurthy Surysekar  
James Sutton  
Ibrahim Tansel  
Kimberly Taylor  
Markus Thiel  
Markus Thiel  
M.O. Thirunarayanan  
Sabri Tosunoglu  
Nikolaos Tsoukias  
Eric Wagner  
Shijun Wang  
Ophelia Weeks  
Dennice Wieden  
Dennis Wiedman  
Stephen Winkle  
Stanislaw Wnuk  
Robert Wolff

## SRAI Undergraduate Research Projects: 2005-2010

(alphabetical by primary researcher's last name)

### **Laura Abbott**

**Research Mentor: Ivelaw Griffith, 2005**

#### ***Economic Effects of Tourism in the Dominican Republic***

Many different social effects come into play in societies that thrive off of tourism. In the Dominican Republic there are many people whose livelihoods depend on the tourist industry. By the year 2010, will the economic benefits to these tourist workers still outweigh the social costs to the Dominican Republic? Will tourism continue to bring value to the lives of the common workers? Will the benefit of tourism continue to be worth the loss of so many other opportunities?

### **Liala Abreu**

**Research Mentor: John Kneski, 2007**

#### ***Mussolini's Endeavor to Infiltrate the Masses***

Public events involve and affect those whom the phrase identifies—the public. There are many forms of public events that have lasted through the ages, such as marriages, exhibitions, festivals and sports. Many of these events are designed for the entertainment and satisfaction of the public, reflecting the customs and traditions of the culture. However, when viewing public presentation, we must consider how much of the display is actually what it seems. Is a local football game, endorsed by an association or an administration, merely for the recreation of its hard-working citizens?

### **Amy Acero**

**Research Mentor: Peter Machonis, 2008**

#### ***Volunteers in the Everglades***

Although Everglades National Park is funded by the federal government, many national parks are also maintained by the help of volunteers. This project will focus on the economic contribution volunteers make to the Everglades National Park by estimating how much money volunteers actually save the government on a yearly basis. The project will also examine how the park's yearly budget is allocated and compare the number of work hours by park rangers allocated to the park vs. the number of volunteer hours, and will estimate the potential cost to the government of hiring a maintenance crew to complete tasks currently handled by volunteers. Interviews with the Volunteer and Finance Coordinators of the Everglades National Park will be used to obtain much of the above information. The project's main aim is to highlight how much the Everglades National Park is benefiting from the help of volunteers.

### **Lorraine S. Acevedo**

**Research Mentor: Leung Kim, 2008**

#### ***MPL1, the Novel Phosphatase with Leucine-Rick-Repeats, Regulates Dictyostelium Chemotaxis and Development***

This project demonstrates how the MAP Kinase Phosphatase MPL1 affects development and chemotaxis of the amoeba Dictyostelium. Dictyostelium is a slime mold that has the ability to migrate according to its needs. The directional migration is pivotal for foraging behavior during growth and developmental chemotaxis toward camp signals sent by a founder of the colony. It is known that the MAP Kinase, ERK2, is essential for Dictyostelium cell development and chemotaxis, but its regulation is not well characterized. Cells lacking MPL1 were generated in Dr. Kim's laboratory and their developmental and chemotactic behaviors are currently being examined.

### **Jorge Manuel Acosta**

**Research Mentor: John Kneski, 2006**

#### ***Abstraction of the Concrete Pope: Pope Pius VII***

Pope Pius VII was faced, upon his election in 1800, with the encroachment of Napoleon, and his French forces in Italy and, more importantly, in lands owned by the Church. Unlike other Popes before and after him he was forced to deal with the concrete, the threat to the Church as a whole by the French, rather than the ethereal or abstract realm of theology. This project will attempt to depict his character and persona through an abstraction of his portrait and hopefully allow others to see this bold figure in history not only as another religious leader, but an overall courageous man with much gumption and vision.

**Noushin Ahmed**

**Research Mentor: Deodutta Roy, 2009**

***The Predictors and Correlations of Vision Health in the US***

According to the NIH, one million Americans over the age of 40 are blind, while 2.4 million are visually impaired. In the next thirty years, these numbers are expected to double. Furthermore, 5.3 million people have Diabetic Retinopathy, 1.6 million aged 60 and over have Age Related Macular Degeneration, and 2.2 million are diagnosed with Glaucoma along with another 2 million not even diagnosed. The increased prevalence of eye diseases over the past decade is alarming. In order to prevent, slow down and even decrease the incidence of disease, the causes and correlates of the diseases need to be explored. The aim of my study is to examine factors related to vision problems and their preventive correlates. I will use the National Health and Nutrition Examination Survey which is one of the national sources of objectively measured health and nutrition data from physical examinations, clinical and laboratory tests, and personal interviews of approximately five thousand individuals. A variety of factors including health indicators, socio-demographics, environmental and occupational factors will be included in the analysis.

**Elie Ahto**

**Research Mentor: John Kneski, 2007**

***The Evolution of Pizza: An Impetus to Civilization and Cultural Development in Mediterranean Society***

Within a round, flattened base of dough lie an array of ingredients wherefrom the story of civilization may be told. Beyond a savory dish and aromatic assortment of herbs, cheese, tomatoes, and the like, pizza tells us in verse and prose that intricate story of humankind beginning with ancient civilization. By circumstance and pain of necessity, pizza emerged and embarked on a course of social, economic, and cultural interplay throughout history. Moreover, every stage of the evolution of pizza bears some mark of the civilization of its time; thus, it may very well serve as a reference point to any given civilization's conceptualization of aesthetics, values, and authority.

**Hanadys Ale**

**Research Mentor: Irma Alonso, 2007**

***Medical Marijuana: Myth or Reality?***

In the last decades there has been a great controversy around marijuana and the possibility of its use to treat medical conditions. Currently, the number of physicians suggesting the use of marijuana as a treatment for their patients' medical condition, and patients claiming that they have been able to cope with their health problem better or even that they have been saved by the medical use of marijuana, is overwhelming. Our presentation is based on a careful examination and analysis of different case studies and physicians case reports on patients who are making these claims, and also molecular data that have been published about the mechanism by which the active chemical component of marijuana may impair the development of diseases like Alzheimer's.

**Natalia Alonso, Monikao Avello, Melissa Pita**

**Research Mentors: John Bailly, David Chatfield, William Ritzi, Bennett Schwartz, 2007**

***Innate Violence***

A central concept in Bill Buford's *Among the Thugs* is that crowd violence is highly addictive and enjoyable. The experience of crowd violence is described as a druggy high in which all moral constraints are lifted, and self-consciousness is lost in the absolute present. This presentation seeks to illustrate this experience by the metamorphosis of an individual in a violent crowd. It begins with his initial rejection of the situation, followed by his acceptance and later the moment where his violent self takes over. Throughout the presentation we juxtapose two seemingly different individuals who frequently interact. As the story develops, we reveal that the character is actually consumed by his innately violent self. We also thought it necessary to relate our fictional story to real instances where the experience of violence overrides morality and ethics.

**Ezekiel Alvarez, Jimena Blanco**

**Research Mentor: John Kneski, 2006**

***Humanism an Archetype of Society***

Humanism and the Golden Ratio effected periods of innovation in art and architecture in Greek and Roman societies. Many Renaissance scholars looked to their Greek and Roman predecessors for insight. The Golden Ratio and Humanism both deal with aesthetics, believing that symmetry leads to beauty. Pythagoras was interested in the golden section and demonstrated that it was the foundation for the proportions of the human figure. Humanism and the Golden Proportion deal with gaining knowledge and creating a sense of beauty that was to effect harmony

**Dillon Arango**

**Research Mentor: Stephen Winkle, 2008**

***Locating Binding Sites of RNA Polymerase Using Restriction Enzymes***

Restriction enzyme properties were exploited throughout this research experiment to determine diverse binding sites of mainly two different RNA polymerases on Lambda DNA. Restriction enzymes were used to cut Lambda DNA in designated areas and then depending on where the DNA was severed to determine where the polymerases were located on the DNA. To make this determination the method used was that of agarose gel electrophoresis, which is used to separate DNA particles by size. By analyzing the varying DNA particles and their assortment within the individual gels I could make the observations of where the polymerases were binding on the DNA. This research is a stepping stone for being able to locate carcinogen binding sites on DNA.

**Laura Arce, Christina Melendez, Maria Leon**

**Research Mentor: Irma Alonso, 2005**

***Undergraduate Research in Florida Public Universities***

The growing support of undergraduate research has challenged universities to create programs that allow undergraduate students access to research opportunities. Honors programs within universities often emphasize the participation of honors students in research, as well as providing unique resources and assistance limited to their college. In this presentation, we offer a sample of five Florida public universities and the research opportunities accessible to undergraduate students. We study whether these five Florida public universities offer undergraduate students equal access to research opportunities when compared to their honors colleges.

**Elizabeth Arenas**

**Research Mentor: Leonard Elbaum, 2009**

***Factors and Preventive Methods for ACL Injuries in Women Athletes***

Within the past decade there has been a dramatic increase in anterior cruciate ligament (ACL) injuries among women who participate in intercollegiate athletics. Compared to male athletes, the incidence of ACL injuries among women is four to ten times higher. Furthermore, women who have suffered from ACL injuries are at greater than normal risk of developing arthritis before the age of thirty, and requiring total knee replacements by the age fifty. The reasons for the high incidence of ACL injuries among women who participate in intercollegiate sports include. Anatomic structural differences between men and women; for example, women have more limited ACL movement than men and also differ in bone structure, having a wider pelvis than men. A variety of interventions to minimize the incidence of ACL injuries among young women have been suggested strategies have been developed. These include an ACL Injury Prevention Program consisting of a fifteen minute training that includes stretching, plyometrics, and muscular strengthening skills. This program is designed to help strengthen the muscles and lower part of the body in order to apply less pressure to the knee and ultimately reduce chances of injury. The goal of my SRAI project is to design and implement an educational program aimed at pre-college and college-age women, informing them about this problem and steps they can take to prevent ACL injuries.

**Alejandro Arias**

**Research Mentor: Orlando Gutierrez-Boronat, 2009**

***The Principle Elements of Jose Marti's Cuba and the Failings of Cuban Government to Achieve this Dream***

From the day of its established independence, on May 20, 1902, Cuba's political history has primarily encompassed nothing but greed, corruption, and incompetence under the leadership of unscrupulous bureaucrats and power-hungry revolutionaries. As a result of these unremitting transgressions throughout Cuba's political tradition, the inspiring and progressive revelation that was Jose Marti's "Cuba Libre" has become completely clouded by the stark reality of Cuba today. This paper examines the principle elements of Marti's luminous vision and the failings of Cuba's bureaucrats and revolutionaries, including the flaws in Cuban leadership, such as Thomas Estrada Palma's obedient allegiance to the United States and Fulgencio Batista's personification as the "anti-Marti." This thesis attempts to create a prospectus for the future and establish a determination as to whether hope and prosperity will supersede the despair and failure that has become the norm in Cuba.

**Stephanie Arosemena**

**Research Mentor: John Kneski, 2008**

***How the Incorporation of Light and Technology Has Revolutionized Art***

This project will focus on the revolution of light and technology in art. The paper begins by locating the beginning of the technology-oriented revolution in the baroque period and its early influences in art and architecture. Then it discusses the revolutionary changes and the new discoveries concerning light during the Industrial Age. Finally, the paper ends with the impact of light and technology-oriented art into Chryssa's life and early works in the 1970s U.S.

**Carlos Atencio**

**Research Mentor: Shijun Wang, 2008**

***Effective Implementation of a Distributed Shared Memory System***

A Distributed Shared Memory (DSM) System is one that has such characteristic and consists in the sharing of resources and coordination of distributed activities between all the connected computers. A DSM System can be used to largely increase the processing speed of the application by combining the computational capabilities of a wide number of individual computer systems. The purpose of this research is to identify an effective implementation of distributed shared memory systems through the development of a software system that can allow applications to utilize a number of machines connected over a network. Computers are connected over a network and each computer is given a task to perform. As long as the computers do not need to exchange information, all tasks are performed in parallel. This work aimed at decomposing a complex task into several sub-tasks as well as distributing these sub-tasks among the computers across the network in parallel. The distinguishing feature of our new algorithm is that it doesn't use a center sequencer, which serves as a coordinator and stipulates a first-come, first-served protocol in the system. Consequently, the potential bottleneck is removed from the system, and the system's reliability is increased.

**M. Avello, J. Fins, M. Ho, M. Pita, A. Rasco, A. Ruano, W. Saraceni, S. Worsdale**

**Research Mentor: John Bailly, 2007**

***The Power of Film: Expanding the Parameters of Academic Discourse***

Modern perceptions of reality are shaped and structured by reference to film, the pre-eminent cultural medium of today. The combination of words, images and soundtrack simultaneously serve to convey information and manipulate emotions. It is also a medium for research, reflection, and creativity. This panel will present both individual and group film projects from freshmen and junior classes. Through explorations in drama, comedy, documentary, and animation, a diverse group of students address topics ranging from the Cuban Revolution to English football hooligans. All film projects presented are student conceived, produced, directed, and executed. Their efforts form a striking commentary on current social issues.

**Sarena Bahad, Pascale Fils-Aime, Meghan James**

**Research Mentors: John Bailly, Gwyn Davies, Grenville Draper, Suman Kakar, 2007**

***The Real World: FIU Honors Place, Miami***

Miami is a vibrant city that is home to people from different cultures and origins. By being exposed to such diversity, people get the opportunity to learn more about the world outside what they would usually be confined to. In this short film, the students play a twist on the popular television series *The Real World* to show what living with culturally diverse roommates is like. The film shows that there are clearly times when conflict or misinterpretation occurs, but in the end we see that regardless of their differences, the girls have learned to live with one another and have actually become very close friends. The roommates truly are remarkably different from one another: each girl is from a different part of the world, speaking an array of languages, and none of them are the same age. Nevertheless, the eclectic dorm works fabulously despite their differences.

**Danielle Baiz**

**Research Mentor: Robert Hogner, 2009**

***A Global Leadership and Service Project in Bangkok***

The Global Leadership and Service Project Bangkok 2009 is an international community service opportunity for globally focused college students dedicated to helping others. The mission of GLSP is to create, manage, and implement a unique learning opportunity to promote the growth and development of young professionals who wish to enhance their knowledge of our increasingly globalized world. Participation in this project results in students' development of awareness of the importance of civic and social responsibility through experiential learning. Throughout the duration of this experience, students acquire new skills, challenge themselves to meet goals, and become increasingly aware of the importance of the "global citizen." This is achieved through collaboration with partner universities in Bangkok. Students

from these host universities work hand in hand with FIU students to achieve the goals set for each site. They also serve as cultural and social liaisons throughout FIU's presence in Bangkok. Students participating in this project will be immersed in a cultural, leadership, and service oriented environment that will prepare them to assume their roles as the global leaders of tomorrow. As a second year participant, my role in the project was a year-long commitment to apply my experience and innovation to ensure continued success. Promotion of the project will begin in late summer, with recruitment scheduled for the Fall. Once we have finalized the participants, we will then begin to formulate our plans for securing funds for the project through corporate donations and social events. Spring semester will be spent implementing these fundraising activities, engaging in team building and leadership seminars, and participation in cultural information sessions in Thai culture, customs, and etiquette. Throughout this process, students will be developing their knowledge of international business through strategic planning, budgeting, marketing, and organizational behavior. The project culminates in our trip to Bangkok during Spring Break 2009.

**Andrew Carey Barnard, Jr.**

**Research Mentor: Irma Alonso, 2007**

***The Importance of Energy Independence***

This research project looks into the importance of establishing energy independence and energy security. It analyzes renewable energy sources, what technology is currently doing to supply us with those resources, and what technology will do in the future to help meet the demand for energy. Research will focus on the highest energy-consuming countries in the present and the projected future.

**Kristin Nicole Barnes**

**Research Mentor: Peter Machonis, 2007**

***The Giant Whiptail Lizard in the Everglades National Park***

This project explores the current impact of the Giant Whiptail Lizard on the Everglades National Park. This invasive species has been introduced through the growing reptile trade in South Florida that has resulted in non-native species being released into the areas surrounding the Everglades. These lizards may be harmful to native species; however, their impact has not yet been documented. A few lizards were captured and provided to professional herpetologists for examination. Through the information procured from the herpetologists and the park biologists, along with a thorough literature review, a bio-profile was prepared for these lizards. This profile assessed the ramifications of this species continuing unchecked in the park.

**Jonathan Barrett**

**Research Mentor: Peter Machonis, 2008**

***The Everglades: A Paddlers' Paradise***

Many trails and amenities exist for exploring the Everglades National Park by canoe, yet few visitors take advantage of the opportunity. This project will focus on the inspirational and therapeutic aspects of canoeing in the Everglades, so that the visitor can experience the true value of wilderness. Notable writers such as Hugh Willoughby have been inspired by canoeing in the Everglades and the project will provide insight into their journeys. Research will evaluate trip journals and safety precautions, as well as my own personal experiences paddling in the Everglades. The joys of paddling in the Everglades will be emphasized, as will the health benefits of being "active" and paddling regularly.

**Carolina Bautista**

**Research Mentor: Nikolaos Tsoukias, 2009**

***The Use of a Flow Chamber for Endothelial Cell Culture***

Atherosclerosis is a disease of the large and medium-sized arteries and the chief cause of death in most of the Western world. Severe atherosclerosis interferes with blood flow, with the result being myocardial or cerebral ischemia or myocardial infarction or stroke. Because of their location between the bloodstream and vascular wall, endothelial cells are continuously exposed to high dynamic shear or frictional stress. It has yet to be demonstrated that inducible NO synthase (iNOS) plays a significant role in shear-stress-induced NO production from endothelial cells (Ozawa N et al,2004). The complexity of arterial geometry and resolution limitations of current technology for measuring wall shear stress and pressure severely limit in vivo studies of arterial wall response. The purpose of this experiment is to use a parallel plate flow chamber designed and constructed by FIU biomedical engineering students to study the effects of shear stress on endothelial cells. This chamber will provide and maintain laminar flow throughout the entire active test region containing the cells and include a closed loop system for media recirculation. Fluorescence will be used to confirm nitric oxide production from the cells as a response to shear stress.

**Katherine M.J. Beale**

**Research Mentor: Ana Roc, 2008**

***Literary and Artistic Representations of the Spanish Civil War: A Comparative Study***

Americans have long been familiar with such representations of the Spanish Civil War as Ernest Hemingway's *For Whom the Bell Tolls*. However, as a result of the strict censorship that characterized Franco's Spain from immediately after the war ended until Franco's death in 1975, it has only recently become possible to openly examine the war from a Spanish perspective. In the past few years, more information on the war has become available, as Spaniards who experienced the war are being interviewed, and artists and historians have the freedom to explore the darker aspects of Spain's national history. This project makes a comparative examination of perspectives on the war, examining both Spanish and foreign reactions through such media as film, visual art, and literature produced from the time of the war up to the present day.

**Sonia Beharry, Stephanie Fox**

**Research Mentor: M. O. Thirunarayanan, 2008**

***Should Fatty Foods Be Eliminated from Schools?***

The purpose of this paper is to systematically determine if it is necessary for high fat options to be eliminated from the school cafeteria. The obesity rate of children is rising significantly, and steps must be taken in order to preserve the future health of America's children. In the school setting, children should consume at least one nutrient-dense meal a day. In order to achieve this change, adjustments must be made in terms of providing options to children and teaching the benefits that will come from choosing those options. An emphasis on physical education will go hand-in-hand with the stress on healthy eating. Based on the findings detailed in this paper, it is apparent these simple changes can have a significant effect in the child's overall health status.

**Esther Benayoun**

**Research Mentor: Irma Alonso, 2008**

***Factors That Influence Mother-Infant Attachments and Their Effect on Future Adult Attachment***

The title of this project refers to the long-lasting emotional bond or relationship between an infant and its primary caregiver, who is usually the mother. Attachment theory describes and explains not only infants' ties with the caregiver, but also the patterns of their relationships with different people throughout their lives. In this paper, research and experiments by experts such as Harry Harlow, Mary Ainsworth and John Bowlby were studied to explain different types of attachments, how they are formed and their effect on future relationships. The research indicates that the type of attachment formed in people's early stage of life influences the manner in which they parent their own children and their way of coping with the stress of actually having a child.

**Shailyne Berges**

**Research Mentor: Robert Wolff, 2009**

***The Effect of Sports Celebrity Endorsements on a Company's Branding***

This paper examines the equity effect of product endorsements by sports celebrities. By examining this marketing tool used by many companies to create brand image, I investigate the influences these pro players have on a company's revenue stream and the historical use and recent rise of sport celebrity endorsements as a promotional tactic to build value and gain profit. I will research the endorsement deals of professional athletes in MLB, Golf, Tennis, the NFL and NBA, with companies like Nike, Gillette, Gatorade, and Coca Cola. Data is available in journals, published reports, and other archives. This paper will challenge the argument that sports celebrities are not major contributors to the brand equity of a company. Some of these icons are admired by many and have become the change agents in consumer behavior.

**Ana M. Bernal**

**Research Mentor: Janine King, 2006**

***Beyond the Natural Understanding of Space***

Environmental behavior studies explores the interactions between people and space to make society more aware of the environment. These studies began in the 1960s in the United States and have directly affected the fields of architecture, interior design, landscape architecture, and urban planning. This project focuses on how design elements can improve the working environment of nurses and doctors at health care facilities. In addition, it promotes community leadership by introducing pioneering concepts and contributes to the development of interdisciplinary relationships that value environmental behavioral understanding.

**Shadi A. Beshai**

**Research Mentor: Kathleen Rein, 2009**

***Synthesizing Kainic Acid in the Lab***

In 1970, kainic acid was introduced as a tool into neuroscience research. It was discovered that kainic acid acted on class of hitherto unknown neurotransmitter receptors, mediating the effects of the most abundant excitatory neurotransmitter glutamic acid. Later, kainic acid helped to create model conditions for prominent human diseases like Huntington's Chorea, stroke, and epilepsy. It is also used as anti-worming medicine, which helps to open new ideas for the development of therapeutic drugs. The reaction product of a cycloaddition between diazomethane and trans-diethyl glutaconate is a 1-pyrazoline. The reaction is syn addition, which means the reaction can happen in different ways in which two substituents can be added to a double bond or triple bond. Moreover, 1, 3— dipolar cycloadditions of diazoalkanes and alkenes yield 1 pyrazolines. The dipolar cycloaddition of diazoalkanes and trans-diethyl glutaconate provides the appropriate pyrazoline ring, which may be converted into aza analogs of kainoids, but one of the newly formed stereo centers is lost. Efforts are underway to develop chiral auxiliaries to control the absolute stereochemistry of the cycloaddition and for the reduction of the pyrazoline ring to the pyrazolidine.

**Andrew Bloom**

**Research Mentor: John Kneski, 2008**

***Fascism, the Church, and Women: The Artistic Philosophy of Giacomo Manzu***

Giacomo Manzu was a famous Italian artist who was known specifically for his sculptures. He is most famous for the Door of Death he made for St. Peter's Basilica, despite the fact that he was a nonbeliever. It is contradictions such as these that I will explore in this project. I will explore what drew him to create art inspired by religious figures, how his art differed from the fascist propaganda of his day, and why he was drawn to drawing and sculpting women throughout his lifetime.

**Teresita Bollar**

**Research Mentors: Kateel Shetty & Krish Jayachandran, 2005**

***Allelopathic Effects of Ragweed Compound Thiarubrine-A on Brazilian Pepper (Shinus terebinthifolius)***

The Brazilian Pepper, *Schinus terebinthifolius* Raddi, is an exotic species, part of the family Anacardiaceae. It is quickly driving out native plants and decreasing the biodiversity in the Florida Everglades National Park. The Hole-in-the-Donut area (HID) located in the Everglades consists of more than 6,000 acres of abandoned and *Schinus*-dominated land. In an effort to replenish and clear out this land a restoration project was started. Following creation of restoration mounds (mixture of mulched *Schinus* trees and surface soil) at the HID site, it was observed that *Schinus* failed to establish on these mounds. Since common ragweed, *Ambrosia artemisiifolia*, was found to be growing on these mounds it was hypothesized that Thiarubrine-A, a biologically active compound found in the roots of ragweed, may be involved in the suppression of *Schinus*. The purpose of this research study was to investigate the potential allelopathic effects of *Ambrosia artemisiifolia* compounds on *Schinus* seed germination, seedling growth and root and shoot tissue. Preliminary studies indicate that Thiarubrine-A produced by ragweed inhibits shoot growth and on direct application showed toxic effects on *Schinus* cotyledons tissue.

**Natasha Boratzuk**

**Research Mentor: Ivelaw Griffith, 2005**

***Barriers that Impede the Enforcement of Counter-narcotics Measures Adopted in Jamaica After 9/11***

The Jamaican government utilizes several security measures to combat illicit drug trafficking, but they have been finding it difficult to enforce existing measures due to internal and external corruption and the ingenious ways drug traffickers circumvent the system. This project seeks to examine the barriers that impede effectiveness in enforcing counter-narcotics measures since 9/11, such as speedboats, illicit drugs, political entities, and possible social ramifications.

**Nasser Brahim**

**Research Mentor: Mahadev Bhat, 2007**

***Smallholder Resource Management in the Amala Watershed, Kenya***

Smallholder farming communities in the highlands of Kenya must overcome sizeable limits to productivity to secure their livelihoods. Many lack access to important public services such as water, education, credit, and agricultural extension. Many people are also farming on marginal lands where soil, water, and forest resources have been severely degraded. In addition, droughts periodically reduce agricultural productivity, threatening local and regional food security and increasing human dependence on already stressed ecosystems for scarce food, water, and wood fuel resources. Farmers have had to design, develop, and adapt strategies for coping with local resource insecurity and degradation. Which of these strategies are



environmentally, agriculturally, and economically sustainable? This study examines and assesses the strategies that are currently being used by farmers in the Amala watershed, Kenya. It explores the potential of Payment for Environmental Services (PES) programs to improve livelihood security, agricultural sustainability, and watershed functions in the region.

**Tiffany Brannon**

**Research Mentor: Felice Lifshitz, 2005**

***African American Identity in America: Home yet Not Home***

The identity given to and held by African Americans is complex. African Americans can only know their ancestral roots in America; their ancestral roots in Africa have been destroyed. Perhaps one of the most commonly held views of slavery as it relates to today's African Americans is that it was horrible but it did not happen to today's African Americans. This paper considers the argument that the effects of slavery affect today's African Americans and continue to do so. These inherited effects include the pain of knowing that the identity of an African American does not have any roots. African Americans have no native language outside of English and no national flag to bear outside of the American flag. The extent to which the African American identity gains complexity from the struggles that blacks encounter in the United States will be analyzed. An in-depth portrait of the African American identity in America will be achieved by comparing it to the identities given to and possessed by individuals of African descent in other countries.

**Tiffany N. Brannon**

**Research Mentor: Valeria Jones, H. Markus, & Kevin O'Neil, 2006**

***Empirical Investigation into African American and American Interdependence***

For over a decade, the concept of 'interdependence' has been used in empirical psychological studies to understand individual differences that can be attributed to culture. Previous research on the 'interdependent' self-construal has largely focused on the bicultural experience of Asians and Asian Americans. The goal of the present study is to understand 'interdependence' in the context of African Americans, using Caucasian and African American participants. The racial disparities and impact of lost ancestral roots on African American identity makes the bicultural experience of African Americans both intriguing and controversial. Using measures of multidimensional racial identity, game theory, and priming techniques, the present research will add empirical data to the scholarly literature and debate on African American identity. It is hypothesized that African American cultural primes will evoke interdependence, and that this activation of cultural identity will result in more cooperative choices in the game. It is also hypothesized that mainstream American cultural primes will evoke independence, and will result in defective choices in the game. Finally, the present study will hope to gain a greater understanding of how African American identity functions in mainstream American culture.

**Shandi Brito**

**Research Mentor: Darden Pyron, 2008**

***Tom Stoppard: A Study in Humor***

Tom Stoppard is an Academy Award winning screenwriter, as well as a multiple Tony Award winning playwright. He is famous for his comedic writing, yet his plays deal with topics such as the Velvet Revolution of Czechoslovakia, the possible existentialist ramblings of Shakespeare's Rosencrantz and Guildenstern, and various scientific and socially complex ideas, like the mind's relation to the body. This project explores the work of Tom Stoppard as related to theories of humor. How does Stoppard find comedy in everyday life, and more importantly, how does he make it work for an audience? How does his work reveal the complex and commonplace nature of humor? What relationship exists between comedy and tragedy? Discussing Stoppard's work and the nature of humor will elucidate the problematic question, When does comedy end?

**Nicole Brown**

**Research Mentor: Suman Kakar, 2008**

***Are Increased Math and Science Standards a Necessity for Society?***

This research examines a relationship between knowledge of math and science and understanding of social scientific issues. Although the United States is the leader in providing higher education, recent studies show that US students are falling behind in math and science skills when compared to students of other nations across the world. As the citizenry begins to tackle more scientific and technical issues in the future, such as the current stem cell debate, this academic inadequacy will begin to permeate the social arena. Data will be collected from high school students taking regular, honors and AP classes, and will measure understanding of the stem cell issue. We expect to find the greatest understanding of the issue in the smallest population, the AP classes. Extrapolation of this percentage to the electorate using known education statistics will provide support for the hypothesis that lower knowledge of math and science is significantly associated with the understanding of social scientific issues.

**Nicole Brown, Eladio Mendez**

**Research Mentor: Suman Kakar, 2008**

***Bioethics: New Frontiers and Weaknesses for American Policy***

This research examines the incompatibility of current education guidelines with future scientific social issues such as the current stem cell debate. Although stem cells have become a household debate, actual understanding of the meaning and implications of their use has been slow to follow. We present a model for the understanding of this phenomenon by considering the unique nature of the bioethical issue. Sources of information for conventional issues can be divided into the environment, institutional education and self-research. Discussion will focus in a model for bioethics in which institutional education and self-research have been greatly diminished, and where information provided by the environment has shifted to misinformation. Questionnaires testing for common misinformation and confidence in misinformation will provide support for the theoretical model proposed. We hope that the proposed model will stimulate discussion on how current education trends are creating an inadequate electorate unable to tackle issues of the future

**Tiffany Brown**

**Research Mentor: Peter J. Clarke, 2009**

***A Self-Configuring Communication Framework for Computer Systems***

Autonomic computing allows heterogeneous systems to manage themselves through self-optimization, self-healing, self-configuring and self-protection. For communication applications, particularly instant messaging, user demand has driven electronic communication providers to extend their services significantly to compete in this market. Although developed in an open platform, communication frameworks such as Skype API, Google Talk API and Java MSN Messenger Library (JML) API vary in the services provided. Integration of these frameworks is one way for collaborative communication applications to provide the most efficient services to the public; however, autonomic computing is necessary. Applications should be able to configure themselves according to the services needed by the user and also be able to recover from unexpected errors. Key elements of policy standards that must be investigated are scope, condition, business value and decision. Scope is simply the subject of the policy; condition explains the conditions that cause the policy to be applied; business value allows the system to prioritize policies; and decision describes the outcome desired. This project will review currently available communication frameworks to compile services, features and identify service attributes to aid self-management, and develop policies necessary to govern this self-configuration of communication frameworks. These policies should provide a way to (1) combine services and maximize efficiency while minimizing cost and (2) seamlessly integrate and operate under business policies to achieve certain goals. These policies will make allowances for the addition of other communication frameworks and also as business requirements change, modifications in policies can be made.

**James Buquet, Veronica Carrasco**

**Research Mentor: Helen Cornely, 2008**

***The Effect of a Country's Education System on the Number of Its Nobel Prize Laureates***

This study examines the confluence of a country's education system and the number of Nobel Prize laureates it has. If there is a similarity in the education systems of the countries with the most laureates, then it could be suggested that these education systems are most effective. In addition, these efficient education systems could be implemented as a guideline for other countries. In this project, all the laureates in all six Nobel Prize categories, chemistry, physics, literature, peace, medicine or physiology, and economics, since 1901 are accounted for, specifically their nationality. The six countries with the most number of laureates are the United States of America, United Kingdom, Germany, France, Sweden, and Switzerland. The structures of their education systems were analyzed and compared in order to mark differences within their systems or with the history of their education system.

**John Burgess**

**Research Mentor: Peter Machonis, 2007**

***An Analysis of Eco-Friendly Lodging in the Everglades***

This project explores the theoretical impact and effectiveness of eco-friendly properties to lodge guests visiting the Florida Everglades, focusing on properties that can be developed with immediate and long-term impacts on the surrounding habitat. I will propose a lodging property that can be realistically developed and have a positive impact to the surrounding area both environmentally as well as economically. A detailed layout of where and, more importantly, how to develop such a property is also explored. I focus on the different strategies that the property implements in order to be considered a "green" property. Lastly, theoretical examples of how such a property could directly and indirectly impact the surrounding area will be explored

**David Bush**

**Research Mentor: Sabri Tosunoglu, 2009**

***Rolling Algorithm for a Modular Tri-form Robot***

The proposed research will focus on applying inverse kinematic analysis to develop a turning algorithm for the rolling sequence of a modular tri-form robot. At present, the robot is able to move forward and backward in one direction only, which severely diminishes its functionality. The proposed turning algorithm will alter the shape of the robot while moving, allowing it to turn in either direction. While modular robots are quite common, modular multiform robots are rather unique and adaptable. The robot used in this research is able to walk, roll and crawl and can be used in a larger scale for both military and consumer applications. The legs are an assembly of fourteen identical servos and a sensor array provides information to the controller on the robot's position, orientation, and surrounding environment. Enabling the robot to turn while rolling will greatly increase its versatility.

**David Bush, Tiara Thanawatien, Ryan Vogel**

**Research Mentor: Ibrahim Tansel, 2008**

***Sustainable Health and Biodiversity Conservation in the Peruvian Amazon***

Communities in the Orosa River Basin region of the northern Peruvian Amazon are highly susceptible to the spread of waterborne disease due to unsanitary practices that contaminate the local water supply. As a result, children in these communities experience high rates of diarrhea and dysentery. Men in the region have also begun to notice a shortage of readily accessible peach palms, which are of economic and ecological importance. The widespread use of destructive harvesting techniques has contributed significantly to this decline. We will work with members of these communities to develop a sustainable water filtration system, promote a hygiene and sanitation educational program, and to introduce and disseminate a strategy for non-destructive palm-fruit harvesting. The success of our efforts will contribute to improved health and decreased loss of peach palms in the short run, and to a healthier and more sustainable relationship between humans and their ecosystem.

**Tulé Cabrera**

**Research Mentor: Ivelaw Griffith, 2005**

***Hurricanes in the Caribbean: Linking Recovery with Sustainable Development***

Natural disasters greatly affect the economic development of all countries in the Caribbean. Hurricanes in particular are a frequent source of economic downfall in the islands in the Caribbean. The focus of this research is on hurricanes as they affect the West Indies. Post-hurricane recovery by several Caribbean islands are compared and contrasted. The British West Indies are contrasted with the French West Indies and independent countries. Aid by outside sources is discussed and compared. The research analyzes how much of the recovery is sustainable and how much of it is a temporary remedy.

**Jonathan Cameron**

**Research Mentor: Marilyn Hoder-Salmon, 2006**

***Persepolis: Invoking an Ancient City to Contrast Two Opposite Forms of Iranian Government***

Marjane Satrapi's esteemed graphic novel, *Persepolis*, never refers to this ancient city of Persia (now Iran). This study will demonstrate through a review of the historic record on Persepolis, the place, that the theme of Satrapi's autobiographical novel, repression in modern-day Iran, is directly opposed to the moderate form of government that existed in the progressive culture of Persepolis. This research confirms that the old city was once part of a powerful empire that maintained a government dedicated to protecting plurality and human rights. While Satrapi, for example, uses illustration to reveal repression in today's Iran, there is another model of illustration, which depicts the reconstructed architecture of Persepolis and conveys the city's commitment to human rights through design and functionality. Therefore, it becomes evident that Satrapi's ironic title suggests that if a once great civilization set a precedent in respecting human rights, it should be possible to reform modern Iran.

**Jonathan Cameron**

**Research Mentor: Peter Machonis, 2007**

***Everglades Conservation and "Green" Opportunities for Business in South Florida***

The implementation of best environmental practices by companies in Southern Florida will have a major impact on the future of the Everglades. There is a growing sentiment in the business community that becoming "green" not only helps save the world but can also be profitable. This presentation focuses on how saving the environment applies to, and can benefit, local businesses and how it directly affects the Everglades.

**Carla Cao**

**Research Mentor: Peter Machonis, 2008**

***Building a Bridge to the Everglades***

Many Miami Dade County students support the conservation of the Everglades but lack knowledge of the Everglades. This project will address this problem by exploring novel ways in which the Everglades can be incorporated into the lives of high school students, specifically focusing on improving teacher training and involving students with hands-on community service activities. Teachers, teacher training professionals, and Everglades National Park personnel will then be interviewed to receive feedback on these proposed methods of increasing student awareness and involvement. The Design Architectural Senior High school of Miami will serve as the model high school for this project. Given that this is a magnet visual arts school, this project may also involve determining the extent to which capturing the Everglades artistically can enhance a student's appreciation of this unique ecosystem.

**Sandra Carbone, Amita Chatterjee, Laura Creel, Taylo Prochnow**

**Research Mentors: John Bailly, Gwyn Davies, Grenville Draper, Suman Kakar, 2007**

***The Blood That Runs Through My Veins***

Eventually, we all inquire about our identity. We try to discover hidden meaning in the depths of our souls, another life flowing through our veins, a secret culture imbedded in our bones, a "true" self awaiting release. We search and we try to grasp the matter—our matter. But while intending to liberate ourselves from "false" identity constraints, we often end up restricting ourselves. In reality there isn't one single identity and we cannot define ourselves as one individual with one set of values or traditions. We may identify more with one culture; yet the final product of our prolonged, multifaceted, soul-searching query always seems to return ironically to the most uncomplicated of conclusions: regardless of background or identity, every individual is connected.

**Gabriela Cardona**

**Research Mentor: James Riach, 2009**

***The Population Patterns of Parrots Worldwide***

The wildlife trade is one of the most harmful activities affecting parrots today. Because of it, poachers contribute to the dying population and possible extinction of parrots. The practices used to obtain and transport these wild-caught creatures result in a mortality rate of up to 40%. Unfortunately, most of these trappers have no other income to support their families, and so resort to poaching to bring in money. Through my research I have discovered organizations that are dedicated to giving these birds a better life. Solutions have been applied abroad to create jobs in communities that are prone to poaching. This research investigates these projects and the various ways in which they are changing the predicament of the smuggled parrot. My plan is to use this research to promote awareness in my community.

**Brett Carrington**

**Research Mentor: M. O. Thirunarayanan, 2008**

***College Students' Website Viewing Behavior***

Eye tracking has been shown to be a useful tool for cognitive task analysis. Eye tracking applications are wide enough to provide data for neuroscience, industrial engineering and human factors tasks, and have also seen use in marketing and advertising applications. Existing studies have already addressed eye behavior using existing websites as stimuli, but few such studies can claim to be well controlled. Such studies have supported the view that images are generally ignored on websites. We have designed and are implementing a study which varies only the placement of images on a website. We expect that a particular image placement will elicit more or longer fixations. We hypothesize that there is an optimal placement for images on the web and the findings have the potential to facilitate greater learning and/or comprehension among users of educational websites.

**Brett M. Carrington**

**Research Mentor: Shijun Wang, 2006**

***Monte Carlo Simulations of Nonlinear Systems and Methods for Solutions of 's Equation***

The Monte Carlo method is one of the most important major numerical methods now in use in various branches of science. We sought to design a Monte Carlo method for the simulation of arbitrary nonlinear systems and to provide solutions to Laplace's equation on known boundaries. To explain our design principals, we provide a concise overview of the Monte Carlo method, its historical applications, and selected simulations. These principles allow us to show a novel Monte Carlo method for the calculation of potential given by the boundary conditions satisfied by a Laplace's equation and develop simulations of other nonlinear systems.

**Mary-Joe Castells**

**Research Mentor: John Bailly, 2007**

***Untitled Dream #1***

This film explores dreams and their often irrational nature. The film unfolds through diverse images accompanied by music that enables the viewer to witness a surreal experience. The film is not meant to portray anything specifically nor is it intended to make sense. Its purpose is to portray the disturbing and illogical images and emotions that dreams evoke. The music is also disturbing and accompanies the images to create a dream-like state. At the end of the film there is a headstone with the phrase "everything ends" drawn on it. This does not only announce that the dream is over but also portrays reality entering dreams. Throughout the film the viewer feels an uncertainty as to whether reality is a dream or dreams are reality.

**Grettel Castro, Diana Jimenez, Alejandra Gonzalez, Yamely Carbot**

**Research Mentor: Richard Bone, 2006**

***Flicker Photometry and Retinal Camera: Measuring the Amount of Damaging Light Filtered by the Retina***

The pigments of the macula in the retina protect the eye against damaging light. The deterioration of these pigments with age can lead to age-related macular degeneration (AMD), a devastating disease that destroys central vision. Flicker photometry is the conventional method to measure the amount of damaging light that these pigments allow to pass through the macula. Using this technique, individuals look at a flickering stimulus that alternates between blue and green lights, and adjust the level of the blue light until the stimulus stops flickering. However, this method has the disadvantage of being based on the subjectivity of the participant. Therefore, a more objective method, the retinal camera, is being investigated to determine its effectiveness as a method to measure the light stopped by the macula. The purpose of the study is to determine which method, flicker photometry or the retinal camera, is more effective at measuring how much damaging light passes through the macula.

**Joy Castro**

**Research Mentor: Stanislaw Wnuk, 2008**

***Mesylation of 2,3-O-isopropylidene-L-lyxono-1,4-lactone to provide 2,3-O-isopropylidene-5-O-methanesulfonyl-L-lyxono-1,4-lactone***

The compound 2,3-O-isopropylidene-L-lyxono-1,4-lactone was used extensively in the effort to form the aldonolactone 2,3-O-isopropylidene-5-O-methanesulfonyl-L-lyxono-1,4-lactone. In turn, this aldonolactone can be used to eventually form compounds that can be tested for the inhibition of certain glycosidase activities present in the liver of humans. If successful, these inhibitors will likely be used in further research for the creation of antidiabetic, antiviral, and antitumor agents. Although it took several attempts to obtain the aldonolactone, as evidenced by TLC plates and NMRs, the compound was eventually mesylated to a satisfactory level.

**Enrique Cepero, Gabriela Garcia, Isselle Medina**

**Research Mentors: John Bailly, David Chatfield, William Ritzi, Bennett Schwartz, 2007**

***Violence***

We live in a world where violence is inevitable, and where, surprisingly, people take pleasure in such actions without noticing it. Normally, when we consider violence, we are the first to condemn it. Yet, in contradiction, we idolize it in practically everything we watch. The movies that are most successful are usually crammed with multiple acts of aggression or various grotesque images. And these, apparently, have little or no effect on the viewers. This film uses various violent cartoon clips because most of us were raised watching these, and the violence in them was deemed "normal." Violence is also a part of human nature, and as portrayed in this film, it builds up in each of us, until it finds a way out. We also use a humorous approach to demonstrate that violence is undeniably, as Quentin Tarantino said, "one of the most fun things to watch."

**Luis E. Chacon**

**Research Mentor: Ju Sun, 2007**

***Solar Energy Concentration***

Solar energy concentration is a big issue in the solar energy field mainly because solar panels are very inefficient and expensive. My research would go into detail on how we can make photovoltaic cells (solar panels) more efficient so they can store and concentrate more solar energy and convert it into electricity for use during all times of the day and under any weather conditions. For instance, solar towers are becoming very popular in the industry for they reflect the sunlight into a receiver that transforms it into electricity. This study will also apply to commercial solar panel packages, whose efficiencies

and collection factors may be improved by modifying installation, orientation, materials, and so on. The goal of this research is to find a way to improve the conversion and collection factors of photovoltaic cells to better meet and satisfy our needs, without necessarily increasing our costs.

**Katherine Chapman**

**Research Mentor: John Kneski, 2006**

***The Golden Ratio***

Only one number throughout history has earned such names as golden, divine and perfect. Originally discovered by ancient Greek mathematicians, the golden ratio, also known as phi, has remained a source of fascination for centuries. This research initially examines the exact definition of phi, its unique mathematical properties, and its unexpected occurrences in numerous places. In particular, phi is examined as it appears in nature, including the placement of leaves on plant stems, the shape of nautilus shells, and the location of florets on sunflowers. Additionally, claims of the occurrence of the divine ratio within the ancient architecture of Egypt, Greece, and Rome are examined and refuted. In the end, the study of the golden ratio focuses on why people feel the need to search for it in so many different locations. Thus, this research really becomes the study of just how deeply mankind values not only order and authority but also a universal aesthetic code within the universe.

**Leisha Charles**

**Research Mentor: John Kneski, 2006**

***The Administration of the Roman Catholic Church: the Vatican See and Its Difference from the Holy See***

The famous remark of Louis XIV, "L'Etat c'est moi!" would hardly be an exaggeration on the lips of the Pope. The Vatican State knows neither freedom of assembly nor freedom of the press. "The State is so organized that the Holy See would be unable to sign the Declaration of Human Rights for its own territory" (Vischer, 617). This paper is intended to show how the Vatican City came about, and how it is administered today. A distinction is drawn between the Holy See, the center of the Catholic Church, and Vatican City, the territorial unit where the Holy See is located, with investigation of the role of both in Catholicism today.

**Guillermo William Chavez**

**Research Mentor: John T. Landrum, 2007**

***Analysis of Zeaxanthin by High-Performance Liquid Chromatography***

Carotenoids are pigments that occur naturally in plants and other photosynthetic organisms. Higher animals are unable to synthesize carotenoids so they must obtain them from their diet. Carotenoids give plants (e.g., carrots) and insects (e.g., butterflies) their intense coloration. In plants, carotenoids are essential to photosynthetic reactions. In animals, carotenoids can be found in several tissues and serve a number of functions all related to protection against light damage. High performance liquid chromatography (HPLC) is used to determine the concentration of lutein and zeaxanthin in biological samples, such as serum samples and retinas. The limit of detection for a sample is found when the signal-to-noise ratio is 2-to-1 (e.g., when the peak that zeaxanthin produces in the HPLC chromatogram is two times larger than the background noise on the baseline around it). The objective of this project was to determine the limit of detection of zeaxanthin using HPLC.

**Pi Ying Chen**

**Research Mentor: William Kurtines, 2006**

***Test-Retest and Interrater Reliability of the Life Course Interview (LCI) for Use with Multicultural Troubled Youth***

The Changing Lives Program (CLP) is a school-based counseling intervention in Miami, Florida, that uses a participatory learning and transformative approach in which multi-problem adolescents can be empowered to take responsibility for and control of their lives and to change their lives in a positive direction. The Life Course Interview (LCI) is a measure of qualitative change in identity and life course development. This study examines the interrater and test-retest reliability of the scoring procedure developed by Ritchie, et al. (2006). Twenty-four adolescents were interviewed within an interval of 14 to 28 days. Details of the procedures as well as the results of the interrater and re-test reliability analysis are reported.

**Leilani Chirino**

**Research Mentor: Kevin O'Shea, 2009**

***Determination of Arsenic Species in Grape-Based Beverages***

Wines often contain significant amounts of toxic arsenic species. The source of arsenic in wines is generally believed to be the result of arsenic-based pesticides and herbicides. Recent studies have also shown that toxic arsenic may be used in the cultivation and acceleration of the ripening process of fruit, ultimately contaminating fruit-based beverages. We have confirmed the presence of arsenic in a variety of wines from different countries. The focus of this project is to establish the presence of arsenic in various commercially available juices and beverages. ICP-MS and AAS were used to determine total arsenic, and the speciation of different arsenic species was established by HPLC-AFS. The level of total arsenic in the tested beverages varied from 0-50 ppb. Studies are underway to establish the presence of arsenosugars.

**Joy Marie Clahar**

**Research Mentor: M.O. Thirunarayanan, 2006**

***Self Explanatory: A Work of Art***

The ingredients of a human mind are like a primordial soup--years of seeing, breathing, feeling, hearing, and tasting. Much of my own experience has been public education and religious indoctrination, which seemed hopelessly irreconcilable. But recently I began a new search for unity and possibilities for expressing my beliefs artistically. As I explored color, geometry, and symbolism, the unity I searched for appeared out of the chaos. The resulting sculpture is an attempt to recreate that vision for others. Roughly six feet in length, two feet in width, and six inches in depth its ingredients are aluminum wire mesh, paper maché, acrylic paint, science and philosophy. The title of the piece is Self Explanatory.

**Joy Clahar, Mikana Maeda, Sean Monroe, Marilyn Vargas**

**Research Mentor: M.O. Thirunarayanan, 2006**

***Corporate Corruption: A Modern Ethical Problem***

The year 2002 brought much attention to the reality of corporate corruption. Companies such as WorldCom, Xerox, Merrill Lynch, Halliburton, and Enron were discovered engaging in a variety of activities intended to increase the personal wealth of a few members at the expense of shareholders, employees, the environment, the United States Federal budget and its economy in general. Although it seems natural for people to do everything in their power to gain as much as possible, this issue has raised serious questions about the limitations of Adam Smith's invisible hand – greed. In an attempt to find an ethical standard that would solve this problem, various philosophies were explored, including those of Kantian ethics, Social Darwinism, Judeo-Christian values, and Hinduism. The results suggested that if evolution did in fact give rise to humanity and, in addition, that life has no predetermined purpose, the "Golden Rule" is a rational moral standard. The idea that a person should treat others as he or she would ideally want to be treated has the benefit of universalization and can be acceptable by atheists and religious individuals alike.

**Cristina Clark-Cuadrado**

**Research Mentor: Peter Machonis, 2005**

***The Phosphorus Problem: The Comprehensive Everglades Restoration Plan***

One of the main goals of the Comprehensive Everglades , or CERP, is to restore the water quality of the Everglades. To meet this goal, the South Florida Water Management District has designed and built several storm water treatment areas (STAs) through which polluted water from agricultural areas passes and becomes treated for phosphorus contamination. I explored plants that are better designed for phosphorus removal in the water and their functions. The results indicate that although underwater plants are more successful in removing phosphorus from the water, plants that are not fully submerged act as a primary filter and are necessary to provide support for the other vegetation.

**Tracy Clements**

**Research Mentor: Krish Jayachandran, 2006**

***Why Do Some Women Stay, and How Do Others Find the Strength to Leave***

Domestic violence is a silent killer; some women can find the strength to leave while others stay and endure the violence. Statistics show that women are fighting back. According to the Uniform Crime Report of the Federal Bureau of Investigation, thirty percent of women killed in the United States die at the hands of a husband or boyfriend. The American Medical Association estimates that over four million women are victims of severe assaults by boyfriends and husbands each year. About one in four women is likely to be abused by a partner in her lifetime. Battering usually goes unreported until it becomes life-threatening. This paper will help define Domestic violence, give an overview of the different stages or cycles that take place in the mind of an abuser, and help women detect if they are in an abusive relationship and how to escape.

**Eli Cohen**

**Research Mentor: Robert Malow, 2009**

***Courtship Intelligence: A Psychological Analysis of Human Courting Behavior.***

Human and animal courting behaviors have a lot in common—both are the result of a natural survival need. However, human behavior in today's society involves many psychological aspects, emotional drives, sexual needs, and other patterns. In recent years, human courtship, dating, and mating, has demonstrated major trends discussed in this research.

**Cara Cooper**

**Research Mentor: John Kneski, 2008**

***Carving a Niche into Ancient Society: A Look into the Lives of the Artists***

This project intends to shed light on the lives and work of artists in ancient societies, especially the role of sculptors. The art that was created during this time not only gives us an important representation of what the society was like, but it also gives a good indication of what the people of this time and area valued. The research focuses on Syria and the Near East and plans to explain about the lives of artists there in ancient times, as well as religion, culture, and government and how the art of this time was created and portrayed

**Yvette Cordova**

**Research Mentor: M.O. Thirunarayanan, 2007**

***Are There Boundaries to Our Freedom of Speech?***

The First Amendment of the Constitution is said to be vital for the protection of U.S. citizens. It's the freedom, both oral and written, to express oneself in whichever way one wants to. In time of war, however, freedom of speech must be monitored for the safety of the public. Also sedition, bribery, slander, obscenity, and perjury aren't allowed, infringing on peoples' freedom of speech. There are many instances in which people feel violated and unjustly treated because of hate speech. What is really more unethical—hurting people with hateful words or infringing on our civil liberties? Topics to be investigated are the *Vamos a Cuba* book banning scandal, the Ralph Arza incident, the Holocaust-denouncing essay, and racist and prejudice speech and its emotional effects on others.

**Stephanie Coriolan, Daniela Ottati, Amalia Gonzalez**

**Research Mentor: John Kneski, 2008**

***Publishing in Honors: Using Mediterranean Art from the Patricia & Phillip Frost Art Museum to Investigate Beauty, Beliefs and Power Across the Ages***

The Patricia & Phillip Frost Art Museum is the repository of over six thousand works of art, including over four hundred from the Mediterranean region. At FIU's Honors College, Aesthetics, Values and Authority in the Mediterranean is a preparatory course for the Italy Study Abroad Program. Through the course, undergraduate scholars have been conducting extensive research on art objects from the Frost Art Museum. Fifteen objects from ten different Mediterranean countries, mediums and periods were selected based upon their aesthetic power and cultural diversity. This research is being combined in a publication to be included in the collections of major research and archival libraries for further scholarly investigation, including the Library of Congress. Our panel discussion will describe the research project and how the publication will be produced.

**Oscar Correa**

**Research Mentor: Peter Machonis, 2008**

***Engineering the Everglades***

This project will research current engineering endeavors for the Everglades and analyze how they are helping or hindering the environment. Specifically, I will focus on a 26.5 square-mile wetland in Broward and West Palm Beach Counties designed to improve water quality in the Florida Everglades ecosystem and will look at the contributions and involvement of the South Florida Water Management District and Burns & McDonnell engineering firm. I will seek to explain the actual process of reconstructing the wetlands and redirecting the natural flow of water through them to the general public. An analysis of what this project means for the Everglades and an evaluation of any potential adverse affects will be included.



**Kathleen Crum, Amanda Ghetia, Andrew Scharhag, Nicole Callahar**

**Research Mentor: M.O. Thirunarayanan, 2006**

***Female Genital Mutilation: Insight and Solutions***

Female genital mutilation is a serious, yet largely unrecognized, health issue in many African and Middle Eastern nations. Also known as FGM, female genital mutilation involves the removal of the female genitalia as a cultural coming-of-age ritual. Not only does FGM present serious physiological and psychological problems, it is a grave violation of human rights that nearly six thousand girls are subject to on a daily basis. Drawing information from non-government organizations such as Amnesty International and the World Health Organization as well as other documents, this paper examines the actual processes involved in FGM, reveals the cultural beliefs behind the procedure, and discloses the negative consequences it presents. This research paper analyzes the steps already being taken by certain organizations to terminate FGM, and offers the solution of education about FGM and its effects for victims and practicing societies.

**Sofia T. Cueto**

**Research Mentor: John Kneski, 2006**

***The Linguistic Transformation of the Iberian Peninsula***

Second perhaps only to race, the more superficial and observable human characteristic is language, one of the external and apparent determinants of culture for any given group of people. It is what people first hear when they come into contact with other humans. This first auditory impression tends to instantly give way to notions and even preconceptions about the other and each respective culture. The linguistic expression of a group is testimony to its environmental, geographical, historical, cultural, political and sometimes even religious experience. Language shapes and is shaped by many aspects of human life. In the case of Mediterranean Europe, language was in continual flux because of the close contact within cultures, political instability due to continual military conquests and the spread of major religions. More specifically, the linguistic variety of the Iberian Peninsula was influenced by original inhabitants of the peninsula, the Roman occupation, and political circumstances. This paper will examine in particular the historical and geographical factors that led to Iberia's present linguistic diversity.

**Laura Davis**

**Research Mentor: Irma T. Alonso, 2008**

***Language Barriers/ESL and its Effects in the Educational System***

The schools in the United States are filled with students enrolled in English as a Second Language or English Language Learner classes. A surplus of school children lack the ability to speak English. These students speak a variety of native languages while the teacher is usually monolingual in English. This research involves testing the effectiveness of these classes and the barriers that they may produce for students attempting to learn English. The main inquiry involves whether teaching English in English to students who do not know the language is effective. Are students learning the language? If the teacher knew the students' native language, would that make the classes more effective? What is the result of the ineffectiveness, if found, on the students' academic careers?

**Montserrat De Para**

**Research Mentor: John Kneski, 2007**

***The Connection Between Art and Science in Changing Views of the Human Body in the Mediterranean***

The human body has been the focus of study and research since ancient times. Throughout the centuries, scholars have contemplated its inner workings to try to grasp a fuller understanding of its interconnections. Historically, researchers have often taken extreme measures, in some cases even breaking the law, to further expand medical knowledge. Today, our understanding of the human body and the practice of medicine has changed since ancient times. This project investigates the foundations of knowledge of the body established by our ancestors many centuries ago.

**Denisse Diaz**

**Research Mentor: Lidia Kos, 2008**

***Transgenic Expression of Endothelin Receptor B Rescues Aganglionosis Phenotype of Piebald Lethal Mice***

Neural crest cells (NCC) are a unique population of cells in vertebrates that arise between the presumptive epidermis and the dorsal-most region of the neural tube. During neurulation, NCC migrate to many regions of the body to give rise to a wide variety of cell types. NCC that originate from the neural tube at the levels of somites 1-7 colonize the gut and give rise to the enteric ganglia. Mice and humans with mutations in the Endothelin receptor b (Ednrb) gene exhibit similar phenotypes characterized by hypopigmentation, hearing loss, and megacolon. These phenotypes are due to the lack of melanocytes in the skin, inner ear and enteric ganglia in the distal portion of the colon, respectively. Piebald lethal mice and

humans with Hirschsprung's disease possess different mutations in the *Ednrb* gene. The major goals of this project were to determine if transient expression of *Ednrb* in pre-migrating NCC is capable of rescuing the intestinal aganglionosis phenotype of *Ednrb*<sup>sl/sl</sup> mice and if the cell autonomous requirements for *Ednrb* was necessary. In order to achieve these goals transgenic mice that express *Ednrb* under the NESTIN promoter were created to directly express *Ednrb* to pre-migrating NCC. The Nestin-*Ednrb* mice rescued the aganglionosis phenotype when crossed with piebald lethal. These results suggest that the early expression of *Ednrb* in development affects enteric ganglia development. This study provides insight in early embryonic development of NCC and could eventually have potential use in cellular therapies for Hirschsprung's disease.

**Yamaris Diaz**

**Research Mentor: Bill Maguire, 2009**

***The Effect of Time on the Value of Fine Art***

Throughout history, people have been obsessed with collections, whether of paintings, sculptures, cars, real estate, stamps, or even beanie babies. However, the wonder often lies not in the subject of collections, but in their economic values. Time greatly contributes to the remarkable price tags placed on many items today. Fine Art Photography, for instance, has experienced a great market boom in recent decades. A print of Helmut Newton's "Two Pairs of Legs in Black Stockings, Paris" could be purchased in 1996 for about \$2,300. What was the price of this 1979 photograph a decade later? It was an astonishing \$38,400. But this is not the worst of it. Today, photographs are being sold at auction for hundreds of thousands of dollars, and sometimes even millions. What are the influences that have caused such extreme changes in prices? Many possible factors could influence a photo to be sold for as much as \$3 million. The photograph itself can spark an interest with its rarity, condition, provenance, and limited edition status, when and by whom it was printed. Other influences include the advent of public and private collections of photography and commercial galleries, as well as the real and imagined investment potential

**Lynn Diptee, Nick Loftin, Sarah Throne**

**Research Mentor: John Bailly, David Chatfield, William Ritz, Bennett Schwartz, 2007**

***A Film on Rape***

Whether or not we accept violence as a natural human trait, it appears to be part of the human condition. Without an outlet to express our extreme emotions, we would not be able to live our lives. Although we may consider ourselves to be non-violent people, we have aggressive tendencies and unexpected situations when the violent side of humanity might surface without a thought toward restraint. Violence or aggression sometimes cannot be held back. Although physical confrontation may appear totally abstract and unusual, it makes us who we are. Violence is, in the end, what makes us human. This film was created to depict an example of one of the most predominant forms of violence in the United States.

**Tanya K. Donadel**

**Research Mentor: Peter Machonis, 2007**

***Lodging for a Sustainable Everglades***

Close to the Flamingo Visitor Center inside the Everglades National Park, a tourist lodge exists that is massive and not appealing to the public. The Park has decided to move in a sustainable direction and is planning to construct a hotel to best reflect the Everglades setting. Design proposals are being submitted for the hotel that will be built in the next decade. The challenge is to incorporate aesthetics with sustainable principles, due to the delicate natural setting. The landscape, architecture and interior of the space are to reflect its location and to heighten the Everglades experience of the tourists using the space. Storm resistance and maintenance will also be important considerations in the final design. This project delineates factors considered in the process of designing an environmentally friendly building. Graphics of the final design proposal are included.

**Vignesh Iyer Doraiswamy**

**Research Mentor: Stanislaw Wnuk, 2007**

***A New Probe to Study the Mechanism of Inhibition of Ribonucleotide Reductases***

Ribonucleotide Reductases (RNR) are enzymes in the human body that are responsible for controlling the cellular concentration of deoxyribonucleotides (DNA). Ribonucleotide Reductases catalyze the production of the 2'-deoxyribonucleotides that are essential to synthesize and repair DNA. Since ribonucleotide reductases are directly responsible for the replication of DNA, they are also, in a way, responsible for the spread of cancer. By studying the mechanism of synthesis of 2'-Substituted 3'-Azido-3'-Deoxyadenine, it is possible to determine if it is possible to use a similar mechanism in anti-cancer drugs. Because cancer is often a potentially lethal disorder characterized by uncontrolled

mitotic division of cells and the ability of these cells to travel through the bloodstream, this can lead to the spread of cancer throughout the body. This study speaks to cancer research and the research working to control it.

**Manivone Douangdara**

**Research Mentor: Irma Alonso, 2005**

***Non-marital Cohabitation, Marriage and Commitment: Differing Views Between Men and Women***

This study extends analysis on human cohabitation by examining the impact on rates of involvement in adult intimate relationships and relationship functioning. Hypotheses are tested that claim that men and women have distinctly different ideas regarding cohabitation, marriage, and commitment. The methodology for this research project focuses on three specific studies that are the primary source of data collection. Two based their findings mainly on the US Census Bureau's 2000 Census Report. The third relies heavily on secondary analysis and conducted research based upon the most commonly accepted theories about cohabitation, the reasons for it, and its outcomes.

**Shea Dunifon**

**Research Mentor: Krish Jayachandran, 2006**

***An Inventory of Arbuscular Mycorrhizae in Flooded Snap Pea Plants***

With an increase in population and a decrease in cultivable land available for agricultural usage, the need for both greater food production and sustainable, environmentally friendly agricultural practices is in high demand. One of the alternative solutions to both these problems involves increasing the production of crops through nutrient uptake, which has been linked to soil microorganisms, particularly mycorrhizal fungi. Mycorrhizae, a term used to describe the relationship by which fungi colonize the cortical tissue of plant roots during active growth, results in a symbiotic relationship by which plants and fungi can exchange nutrients, thus allowing for the plants to accumulate a greater biomass as well as increased yields. Aerobic in nature, mycorrhizae are estimated to occur in ninety-five percent of all terrestrial plants, including the snap bean (*Phaseolus vulgaris* L). Based upon previous greenhouse studies at the USDA Subtropical Research Station, Miami, studying the effects of short-term flooding on snap beans and the effects of mycorrhizae on plant growth conditions, it was observed that neither was affected by short duration flooding events. The purpose of this study is to utilize the resources available at FIU's Soil, Plant, and Microbiology Laboratory in collaboration with the USDA to create an inventory of both the mycorrhizal fungal species and the number of each present from the previous snap bean study. The significance of mycorrhizae in snap bean will be discussed.

**Shea Dunifon, Ryan Mac Farland, Wai Tsang, Moises Dejmain**

**Research Mentor: Irma De Alonso, 2006**

***An Exploration into the Environmental and Safety Concerns Arising from the Widespread Usage of Hydrogen in the Industrial, Commercial, and Residential Sectors***

There has been much debate in the scientific field as to whether hydrogen is the best alternative to fossil fuels as an energy carrier for the industrial, commercial, residential and technological sectors of the twenty-first century. With environmental concerns arising over the depletion of the ozone and a shrinking supply of fossil fuel reserves, alternative energy sources that are not only environmentally friendly, but safe for mass human consumption and sustainable for the years to come are in great demand. However there are many safety concerns that must be addressed before hydrogen can be implemented widely; for instance, almost of all current hydrogen gas production relies on the usage of fossil fuels, predominantly the production of steam from the burning of natural gases such as methane. The purpose of this discussion is to best represent both the environmental and safety concerns for widespread hydrogen usage and how these concerns can be addressed by the scientific community and create awareness for the general public.

**Leah Dunleavy**

**Research Mentor: Bennett Schwartz, 2008**

***Do Asperger's Children Experience TOT Less than Non-disabled Children?***

Asperger's syndrome, a disorder in the autism spectrum, and the tip of the tongue (TOT) experience are two aspects of psychology that have been researched separately, but never together. TOT is a metacognitive judgment that results in a feeling of temporary inaccessibility. Asperger's syndrome is a combination of deficiencies in social and communication skills. Autism is associated with failures of theory of mind and metacognition refers to self-oriented theory of mind. Because Asperger's syndrome is a form of autism and these individuals may have deficits in metacognition, they will also experience fewer TOTs than normally developed children.

**Manuel Duran, Meliza Frias, Brandy Garcia, Mei-Ling Rosario**

**Research Mentors: John Bailly, Gwyn Davies, Grenville Draper, Suman Kakar, 2007**

***Similarities and Differences of Three Caribbean Cultures: Cuban, Puerto Rican, and Dominican***

Though meaning the same thing at the core, each name can also represent a different perspective on the staple Hispanic meal: rice and beans. Both movie trailers explore the differences in culture, the first one taking a more serious approach, tackling issues such as religion and prejudice. With a more comical tone, the second trailer pokes fun at the difficulties of communication through cynicism and satire. The trailers are meant to introduce the isoon to theaterí faux-movie in which four people of four varying cultures live together in one house.

**Gina Eckardt**

**Research Mentor: Irma De Alonso, 2006**

***Patterns in Hispanic Consumer Behavior***

This project researches Hispanic consumer behavior. The research is conducted in a non-experimental way to discover whether or not the code-switching effect of English to Spanish or vice versa in publicity ads affects the way people think of the product advertised. The method involves constructing different false ads--some will have one word in English and the remainder in Spanish, others will have an entire phrase in English or Spanish with the majority of the content in the opposite language. A survey is attached to each ad to discover the responses to them. The research will be conducted bilingually. This research can help marketing campaigns directed to Hispanic and non-Hispanic consumers.

**Antonio Eguiluz**

**Research Mentor: Peter Machonis, 2005**

***Everglades Birds and Developing Areas***

Much of Miami is located on land that was part of the natural Everglades ecosystem. With urbanization, wildlife (including many birds), was displaced from developed areas. Other birds, nonetheless, remain and are living in our backyards. Some housing projects and neighborhoods are being built around borrow pits, commonly referenced as "lakes." These serve as an attraction to birds that have remained in the urban areas, as the lakes in some ways resemble the Everglades habitats that the birds once used. Unfortunately, neighborhood planners and builders are often very ignorant about wildlife needs when they design green spaces and open areas that become the only wildlife habitat in urban landscapes. This study examines ways in which we can better design lakes and open areas to accommodate the native birds that formerly inhabited in the Everglades.

**Lauren Elbaum**

**Research Mentor: Jim Riach and Devon Graham, 2008**

***Music in the Amazon***

This project involves observation of the ways that music enters the lives of people in the Amazon. The study includes the uses of music, ceremonial, functional, social, didactic and traditional. The purpose of the project is to learn about Amazonian culture through music. Findings will be recorded in a written and auditory journal.

**Kristen Ellenberger**

**Research Mentor: Peter Machonis, 2008**

***Introducing Elementary Students to the Everglade***

The elementary school years are the optimal time to teach children about the importance of protecting our environment. This project focuses on developing lesson plans for a unit of study about the Everglades specifically geared toward 5th grade elementary school children. During my student teaching field assignment at Hialeah Gardens Elementary School, I will determine the level of knowledge that the students have about the Everglades, and will then teach various lessons incorporating art, science, history, geography, music, reading, writing, interactive games, and other creative techniques to highlight environmental awareness. Students will be given a post-test to determine how much Everglades knowledge they retain, reflecting the effectiveness of the teaching strategies.

**Adel Elsayed**

**Research Mentor: Eric Crumpler, 2006**

***Isolation of Pregonitor Stem Cells from Rats, Stem Cells to Heart Cells***

Mesenchymal stem cells have been known to have the plasticity to differentiate into many types of cells, including osteocytes, adipocytes, chondrocytes, and fibroblastic connective tissue cells. In this research, we investigated the potential of culturing bone marrow Mesenchymal stem cells (BM-MSCs) to be differentiated into healthy cardiomyocytes for

replacing dead or infected myocardial tissues. After aspirating bone marrow from Sprague-Dawley rats and isolating their MSCs, the cells were subcultured into the second passage. Half of the sample was exposed to 5-azacytidine. 5-azacytidine is an analogue of cytidine which is clinically used in the treatment of leukemia, but also in differentiating MSCs into myocytes in many previous researches. The second half was co-cultured with already existing cardiomyocytes to be differentiated by cell-to-cell interactions.

**Adel Elsayed**

**Research Mentor: M.O. Thirunarayanan, 2007**

***Students Comparing the K-12 School Social Environment in the U.S. and in Their Countries of Origin***

A focus group session was conducted to determine students' experiences related to school social environment in K-12 schools of the United States and in their countries of origin. Video transcripts of the focus group session were analyzed using qualitative techniques of data analysis. The findings were presented in a panel presentation. Findings of the study include: (a) students respect teachers more in other countries than in the United States; (b) school work is harder in other countries; (c) it is easier to make friends in other countries; and (d) students learned more content in their countries of origin than in the United States. Relevant video clips from the focus group will be shown during the poster session. Audience participation will be encouraged during the presentation. Session participants will be encouraged to ask questions, agree, disagree, and also have an opportunity to share their own thoughts and experiences.

**Moises Enghelberg**

**Research Mentor: John Bailly, 2008**

***La Risa Nerviosa, Poemas (Nervous Laughter, Poems)***

The intention of this poetry collection is to state the observations of an individual in his early years upon arrival into a society and environment, strangely defined by the distance between authenticity of experience and imagination. The "experience" is defined as being one that distorts and confuses deep and personal symbolism. The impressions created by the experience reside in transfixed memories written through the recollection of previous thoughts rather than on the mere instant. The purest characteristic of poetry is that it presents its meaning through the most humble and unexpected forms. These verses were assembled with the same principle in mind--that poetry, being impenetrable and universal, is in the singular sense personal, yet it is for everyone.

**Juan Nicolas Escobar**

**Research Mentor: John Kneski, 2007**

***Renaissance Artists and Their Influence on the Idea of Beauty***

According to the Oxford dictionary beauty is a combination of qualities that delights the aesthetic senses, an attractive feature or advantage. However, critics determine what is considered beautiful and pleasing to the human eye. In the 20th century beauty was determined by advertisements, movies, magazines and television shows offering guidelines to set new standards of beauty. Conversely, five hundred years ago, beauty was being determined not by movies nor magazines but by the Renaissance artists and leaders who had the last word when it came to prevailing standards. Their artwork is preserved today, where beauty during the Renaissance and through the 20th century has commonality: the incorporation of the classical ideals derived from the Greeks and Romans.

**Myron Evans**

**Research Mentor: Lidia Kos, 2007**

***Generation of a Mouse Model of Melanoma***

The malignant transformation of melanocytes leads to melanomagenesis. Mutations in the Ink4/Arf locus were shown to be associated with familial forms of melanoma. Mouse models are useful to study human conditions. Mice with mutations in the Ink4/Arf locus do not generate melanoma but increase the probability of its development when crossed into mice with other mutations. Endothelin 3 (Edn3) is essential for proper melanocyte development. We generated mice that produce excessive Edn3 throughout development, leading to the accumulation of large numbers of melanocytes in the skin of adult mice where they are not normally found. The main goal of my study was to cross these Edn3 transgenic mice with the Ink4/Arf mutants to investigate whether melanoma would form. For that, I genotyped these mice and established several crosses. The progeny developed tumors that metastasized quickly. These preliminary data indicate that endothelin might play a role in the progression of tumors.

**Vera Fernandez**

**Research Mentor: Peter Machonis, 2005**

***Attempts at Controlling the Natural Flow of Water from Lake Okeechobee to Florida Bay***

Over the past century, the State of Florida and the Federal Government have attempted to control and alter the natural flow of water from Lake Okeechobee southward through the Everglades to Florida Bay. My poster examines the reasons for these efforts, and the consequences, both intentional and unintentional, of water control activities. The project investigates early mound and canal building by indigenous Americans, the work of Hamilton Disston, the US Army Corps of Engineers, the C&SF Project and, finally, the South Florida Water Management District.

**James Fins**

**Research Mentor: John Bailly, 2007**

***Violence in***

Violence dominates American culture yet many individuals attempt to deny this reality because of the taboo associated with violence. This film was created to depict cultural violence in a satirical and humorous light. The scenes throughout the video are quite violent in nature, but since these acts are channeled at an inanimate object the real impact of the violent acts is hidden. The video also depicts the inner desire for destruction. This destructive drive is inherent in people and leads to the manifestation of violent entertainment. Furthermore, the video combines humor and violence in a way that makes viewers laugh and, ironically, crave more destruction.

**Hilda Fouladi, Tarek Turjuman, Pedro Silva, Jean Paul Ciarmella, Kenny O'Neill**

**Research Mentor: Irma Alonso and Dennice Wieden, 2008**

***The Effect of Air Pollution Laws on Business Profits around the World***

Recently, many laws have been passed regarding air pollution control in the United States and Europe. These laws affect multinational corporations significantly by reducing their profits and ability to compete with a country, such as China, that has virtually no laws regarding air pollution. This leads corporations to base their factories in those countries with less strict laws regarding air pollution. In turn, this has a negative effect on the environment and the health of the individuals in the developing nations that accept foreign direct investment with open arms without regard to the repercussions.

**Meliza Frias, Crystal Van Orsdel, Andrea Lahoz**

**Research Mentor: John Bailly, 2008**

***Contemporary Art: Creative Academic Discourse and Building Honors Community***

Incorporating the arts into the Honors College curriculum and activities has provided students a source of expression within courses and served as a means by which to create a united community. The Honors College has achieved this by not only utilizing academic projects that foster critical and creative thinking skills, but also by venturing beyond the campus in faculty and student coordinated excursions. Through projects and events such as the the Trial of Galileo Propaganda Film, Box Portrait Exhibition, and the Honors Society Film Festival, non-art major students have created exhibitions and other venues showcasing their work. Students have also coordinated lectures and visits to the leading cultural institutions in Miami. The Honors Society has hosted lectures by Martin Z. Margulies, Jonathan Greene, and George Kinghorn. Students also planned group visits to the Miami Art Museum, the Wolfsonian, and the Rubell Family Collection. These projects, events, and excursions open the world of contemporary art to students who otherwise might not engage in art nor perceive its relation to the larger issues of culture, society, and identity. Being immersed and challenged by contemporary art as a group serves as a wonderful bonding mechanism for our diverse Honors community.

**Calvin Craig Fritchey**

**Research Mentor: Kimberly Taylor, 2008**

***Contemporary Christian Music Identity: An Examination of the Role of Sociology, Religion, Psychology, and Economics in the Development and Marketing of CCM***

Contemporary Christian Music (CCM) is a genre that controls about seven percent of the music industry and produces sales of \$700 Million. CCM is a unique form of music that is not bound by a certain sound or style but rather is joined together by two important ingredients: Bible-based lyrics and modern music stylings. This paper discusses the identity of this growing genre through literature in various fields of study including sociology, marketing, economics, history, religion, psychology, statistics, and pop culture. This paper shows that CCM is a genre of music in which Bible-believing Christians join forces to market, promote, and distribute music from a defined Christian worldview with the purpose of ministry, evangelism, entertainment, artistry, and making money. Additionally, this paper offers insight into a group of people that are rarely studied in academia.

Student Research & Artistic Initiative Program  
Compendium of Undergraduate Research Projects: 2005-2009  
The Honors College at Florida International University, Miami, Florida

**Kaitlyn Fuller**

**Research Mentor: Peter Machonis, 2007**

***Waist Deep in the 'River of Grass'***

There is extensive literature linking conservation or environmental sensitivity to direct experience with nature. Through a combination of research and hands-on exploration I have developed a relationship with the Everglades which, I believe, is crucial to a conservationist mentality. To share my experiences of this unique environment and its history I developed a self-guided tour that goes beyond the average brochure or guidebook. I want to draw people away from the crowds into a personal, physical experience where the importance of the ecosystem unfolds for the visitor.

**Armando Gali**

**Research Mentor: Irma Alonso, 2007**

***The Effect of Income on Sexual Activity***

Does one's income determine how many sexual partners one has, or how frequently one engages in sexual intercourse? This stereotype has been primarily male-based, but can also be applied to females. This research responds to these statements and questions.

**Anilec Garcia, Vanesa Nunez**

**Research Mentor: Manual Carvajal, 2006**

***FIU's Honors College Students' Allocation of Time Between School and Other Non-Related Activities***

This project demonstrates on average how many hours a week students devote to school and to other non-related activities. Our hypothesis is that students will dedicate more time to school activities than to other non-related activities. The participants of this study will be all Honors College students currently enrolled in an IDH course. Data will be collected through surveys given to students prior to the commencement of class with professors' permission. For school activities, we observed areas such as class and study time; for nonrelated activities, we concentrated on areas such as entertainment, family, and extracurricular activities.

**Helen Garcia, Sandra Perez**

**Research Mentor: Kathryn Anderson, 2009**

***Evaluation of the Validity and Usefulness of a Practice Template of Health in Families with Breast Cancer***

We have developed research to evaluate the validity of a practice template for health in families with breast cancer. The research begins with previous studies about the experience of women and couples dealing with breast cancer (Moch 1995, 1998; 2001, 2005; Anderson 2001, 2003, 2006). The template should improve the assistance that nurse practitioners and other health care providers give to women and their families when dealing with breast cancer. We will present the template to four oncology nurse practitioners who will evaluate the template and provide their feedback and comments by answering nine questions. The study will be conducted at Jackson Memorial Hospital, Baptist Memorial Hospital, Broward Health, and Memorial Hospital.

**Maria Garcia**

**Research Mentor: John Kneski, 2007**

***The Mosque of Cordoba, Labyrinth of Columns: The influence of Islamic Rule on Modern Day Spain and the West***

The symbol of the Great Mosque of Cordoba is a reminder that the legacy of the Muslim inhabitants remains and is an important part of Andalusian society. It is the purpose of this paper to examine this Spanish artwork and through it to elucidate the love/hate/tolerance relationships that exist between Islam and the West.

**Juan Sebastian Gil**

**Research Mentor: Mathew Mirow, 2008**

***Is Property a Social Function? The Story of Chilean Reform***

The Twentieth Century Latin American constitutions marked significant breaks in the hitherto established notions of property on the continent. A case study will be conducted on the 1925 Chilean constitution in which the convention's sub committee of drafters incorporated language that would restrict property to limitations serving the maintenance and progress of social order. Exploration will be conducted to determine the intellectual sources of influence that converted the foundations of property as a natural right embedded in the constitution of 1833 to the social function conception of property. The historical and ideological trails pursued will include the influence of the French in the 1833 constitution; the

influence of the German constitution and German political philosophy; and the socio-political context of Chile in the 1920s as the impetus to the conflict in property theories. An account of their merging influences will be given relative to the final phrasing of the constitution.

**Rossana Wasfia Gomez**

**Research Mentor: Peter Machonis, 2007**

***The Wood Stork: The Canary of the Everglades***

Like the proverbial canary in the mine that warns of danger, the Wood Stork can serve to draw the public's attention to its plight and that of the Everglades ecosystem. The stork and the Everglades are dying due to the water imbalances in the Everglades, an extremely critical issue. The Wood Stork is extremely sensitive to water levels in the Everglades due to its unique feeding habitats; therefore this prehistoric looking bird serves as an indicator species when its populations decline and breeding seasons are unsuccessful. This project explores the relationship between the Wood Stork, water levels and the Everglades, and examines the factors that determine whether the Wood Stork (and thus, the Everglades) will survive.

**Jessica Victoria Gonzalez**

**Research Mentor: Kevin O'Shea, 2008**

***Endosulfan Pesticide Concentration Analysis with Gas Chromatography***

The agriculture industry's widespread use of pesticides poses an environmental and human health threat. Endosulfan is an efficient and commonly used pesticide; however, it has the hazards of a neurotoxin. Because endosulfan possesses strong neurotoxicity and is persistent in the environment, it is critical to identify effective methods to detect, analyze, and remediate endosulfan. An experiment was conducted using a vegetable buffer strip layered with soil containing fungi and bacteria to reduce endosulfan runoff in Florida's Miami-Dade's soil. The degradation of endosulfan is monitored by a Gas Chromatography-Electron Capture Detector. The different compounds yield unique retention times based on their affinity towards the DB-5 column. Then ECD detects the electron-absorbing compounds. The endosulfan concentration is proportional to the level of electrons captured, and is determined via internal standard calibration curve of pentachloronitrobenzene.

**Gregory Grandio**

**Research Mentor: Peter Machonis, 2008**

***The Round Menace: The Invasion of the Island Apple Snail***

There are many species of invasive animals and plants in the Everglades. Some species, such as the Burmese Python, are well known, while many others go unnoticed by the public. This project examines how the Island Apple Snail was introduced to the Everglades, how and why it has become an invasive threat to the environment, and what is being done to remove it. It explores how volunteer efforts can be utilized to bring about awareness of harmful invasive species, as well as help in their removal.

**Quentin Gregoire**

**Research Mentor: Sharlita Millington, 2007**

***Local Retailers Falling Off the Map: Customer Satisfaction Moves to Another Level***

This research reports why consumers prefer shopping outside of their residential areas. A survey sample of 300 demographically diverse consumers was randomly chosen from various residential areas. The driver—for example, quality, service, or cleanliness—that influences customer satisfaction changes; thus local retailers should identify these changes to retain their customers.

**Philip Gregor**

**Research Mentor: Peter Machonis, 2008**

***Fire and Ecosystem Management in the Everglades: The Role of Lightning and Man-induced Fires***

When Floridians see out-of-control wildfires close to highways and residential areas, there is usually a clamor for better fire suppression. In reality, though, the problem is not too many fires, but rather too few. Since the 1950s many habitats have been negatively altered by the lack of regular fires. This project investigates current and past fire and ecosystem management in the Everglades, with emphasis on the role of lightning- or man-induced fires in the Everglades, and impacts on specific habitats, such as the pinelands. Many Everglades habitats are perpetuated by fire and support endemic and fire-adapted species. Because roads and canals now impede the natural spread of fire, prescribed burns are necessary to preserve biodiversity and maintain natural ecosystems. Ecologically sound fire management is already restoring damaged ecosystems and even reducing the spread of some invasive species.



**Clyde Grey, Tanya Jackson, Jennyfer Lopez, J. Dennis Martinez**

**Research Mentor: Irma Alonso, 2008**

***Reduction of Traffic Congestion: Analyzing Three Traffic Control Systems***

One of the more serious problems affecting daily life in Miami is traffic congestion. It is important to change the current method of traffic control and upgrade the current system. To achieve this change, two varying countries' traffic control systems will be compared with the American Intelligent Transportation System (ITS). The two systems are the European traffic control system (SCOOT-Split Cycle Offset Optimization Technique) and the Australia traffic control system (SCATS-Sydney Coordinated Adaptive Traffic System). A detailed study will be conducted on previous applications of the three systems and from the data gathered, the efficiency of each of the systems will be measured as it relates to traffic flow, delay, and congestion. Also evaluated will be the cost effectiveness of each system as it relates to implementation, upgrading, and upkeep. A recommendation will be made to the Florida Department of Transportation on whether to change the current system or upgrade it.

**Amanda Guazens, David Jaramillo, Jario Pava, Crystal Van Orsdel**

**Research Mentors: John Bailly, David Chatfield, William Ritz, Bennett Schwartz, 2007**

***Violence Unmasked***

In modern America, destructive behavior is often envisioned only in rough sports or in the ugly parts of town. The purpose of this film is to unmask violence and expose its hidden paths. Not only can violence be encountered everywhere, it is part of human nature. Chemists, teachers, punk rockers, and even policemen are guilty of potential violence because it is an innate characteristic that lies within them. This film uses a question-and-answer format with a slightly comical and exaggerated tone to prove the omni-present existence of aggression.

**Martha Guitierrez**

**Research Mentor: Lorraine Bahrck, 2006**

***Six-Month-Old Infant Detection of Prosody***

According to the Intersensory Redundancy Hypothesis (IRH), amodal properties, such as tempo and rhythm, are more salient in multimodal redundant stimulation in early development (Bahrck & Lickliter, 2002). In this study, these predictions were used to test infant perception of a change in prosody. Six-month-old infants were habituated to infant-directed speech, either in an approving or prohibiting intonation, under bimodal audio-visual conditions, and then tested on a change in prosody. It was predicted that infants would show visual recovery (determined by measuring their looking time) to the change in prosody following habituation. Preliminary results indicate infants detected a change in prosody that supports the predictions of the IRH. Directions for future research include conducting a unimodal auditory condition in which the infants would receive a change in prosody only through an auditory modality. Infants should not show visual recovery to the change in prosody since it is not presented under bimodal redundant stimulation.

**Saransh Gujral**

**Research Mentor: Krishnamurthy Surysekar, 2007**

***Section 404 of the Sarbanes-Oxley Act: How Beneficial?***

My research paper focuses on Section 404 of Sarbanes-Oxley Act (2002). This section mainly requires management to have better internal control, thereby increasing stockholders' confidence in financial reporting. It has created controversy because of the costs associated with compliance with the requirements of this section. My research on publicly available information and interviews with a manager of an audit firm leads me to conclude that the cost can be significant for small and medium-size companies. Thus, an amendment to this section may be helpful. However, in the overall view, this section may be helpful to auditors and add more value to corporate financial statements.

**Christina Haramboure**

**Research Mentor: DeEtta Mills, 2008**

***Nematode Research for the Purpose of Identifying Diversity and Significance in Florida and U.S. Soils***

Nematodes have been shown to cause billions of dollars worth of crop damage in the United States and throughout the world. Many nematodes are plant parasites that get their nutrients from feeding off of different plants, while simultaneously debilitating them. Therefore, it is necessary to identify these organisms, as well as to devise various ways of dealing with them. In this experiment, nematodes were isolated from the soil using various methods. Soil was added to nutrient agar plates with E coli so that the nematodes would crawl out of the soil and to the E. coli food source. Also, filter methods were used where the soil was placed on a screen filter over a shallow container with either ethanol or phosphate-

buffered saline in it. This was done so that the nematodes would fall out of the soil and into the liquid. The nematodes were then either picked or pipetted out so that they could be observed under a microscope. They were sketched and then put into wells or PCR tubes, in preparation for running a PCR. PCRs were run on the samples, and electrophoresis gels were run following the PCRs. The gels did not turn up any results, and the observation of the nematodes under the microscope did not show any apparent structural diversity.

**Sarah S. Hays**

**Research Mentor: Leonard Elbaum, 2006**

***Working Around the Flawed System for People with Disabilities***

This paper illustrates "first hand" the realities that an individual with disabilities faces in the public educational system in South Florida by reporting on a 24-year-old student with severe cerebral palsy who is now pursuing a GED degree. These disability hardships can be arranged in two categories: a lack of specialized tools that would enable him to learn; and a lack of professional guidance that would greatly help the student make good decisions. Although there are laws that advocate for persons with disabilities, the reality is that many individuals do not benefit from the services available. This research suggests the wide gap can be reduced.

**Sarah S. Hays, Hector Jorge**

**Research Mentor: Peter Machonis, 2007**

***Nature Deficit Disorder: Connect to the Everglades***

Today more than ever, global society is concerned with environmental issues. Nonetheless, Nature Deficit Disorder is a term that has surfaced to describe many of our nation's youth. Television, video games and computers are often blamed, but the result is that teens are less connected with the natural world. We are currently working with Everglades National Park, high school students, teachers, and artists using media that adolescents relate to: video, music, computers and the Internet. Our goal is to create an original video and website that connects teens to their place in the Everglades. These aids will be distributed to Miami Dade County Science teachers with the intention that students will connect to, understand, and be inspired to explore the Everglades.

**Giselle Hernandez**

**Research Mentor: M. O. Thirunarayanan, 2008**

***Variation within Chopin's Preludes***

Frédéric Chopin can be considered a genius. In this project, his twenty-four preludes (Op. 28), which were written in a short period of about four years, were examined for different musical elements. This paper numerically accounts for some of the different musical elements such as tempo, time signature, length by number of measures, and other features in Chopin's preludes to determine the variation within each category using standard deviation. Based on this, and the assumption that this work of musical literature has already been considered grand on a qualitative scale, conclusions can be drawn about Chopin's creativity in producing such a wide-ranging work in such a short span of time. The method used may even be valuable to the social sciences to measure creativity.

**Vanessa Herrera**

**Research Mentor: John Kneski, 2007**

***Women in Medieval Literature: Depictions in Courtly Love and Dante***

Henri Martin created a print entitled "Dante Rencontre Beatrice" that recalls Dante Alighieri's *The Divine Comedy*, and more specifically, *Paradise*, the third part of the masterpiece. I endeavor to present one view that explains how Beatrice is represented in Dante's work by taking a feminist perspective and exploring the medieval literary world of chivalry, I locate the essential background knowledge for Dante's portrayal of Beatrice and its ensuing illustration by Martin. The *Divine Comedy* is a representation of her as an ideal, superior, virtuous, and beautiful woman. This view of women established in the courtly love phenomenon of medieval literature gave them a false sense of worth, something that was still not effectively rectified when Martin published his print at the end of the nineteenth century.

**Yudiesly Herrera**

**Research Mentor: John Kneski, 2007**

***Evidence of the Influence of the Roman Empire in Spain***

Empires like those of the Visigoths and the Muslims controlled Spain throughout its history. Yet this country was an important Roman province that enjoyed the privileges of Roman citizenship. Rome forever imprinted itself in every corner of the Western world and left its mark in Spain. The Romanization of nations is evident in former Roman colonies. I believe that despite the convention of Spanish culture molded by centuries of Arab domination, the influence exerted by seven hundred years of Roman control is visible in the nation. In this analysis, I introduce a summary of Spanish history under Rome followed by remainders of the empire within the peninsula. Finally, I look at the role played by those vestiges of Roman Hispania in today's Spain.

**May Ho**

**Research Mentor: John Bailly, 2007**

***The Fight for Democracy in China***

To many of us, China is best known for three things; the wall, the food, and Jackie Chan. We tend to look past the more subtle reality and what occurs behind the scenes in the world's most populated country. This presentation moves beyond the Great Wall, Lo Mein, and Kung Fu heroes. It was created to bring to light the people's fight for democracy from the policies of the government that result in tragedies and the present economic struggles of the Chinese people. The massacre at Tiananmen Square, the SARS epidemic, overpopulation, and poverty are narrated by a Chinese-American lyricist, Jin. In his song "Same Cry," the authority of the Chinese government and the Chinese-American community is challenged.

**Sharlene Hoyos**

**Research Mentor: Peter Machonis, 2008**

***The Nike Missile Site Located in the Everglades National Park***

Did you know there is an unpopular Nike name in South Florida? The unpopular "Nike" is the Nike Missile Site located in Everglades National Park. Most local residents are unaware of this landmark that holds such an important place in American history. How can Everglades National Park get more local residents like Cuban youths and students involved through volunteering or visiting the park? This project determines the knowledge residents of South Florida, particularly of Cuban background, have of the Nike Missile Site in the Everglades National Park. It explores how Cuba played a major role in the park's history during the cold war, and looks at this site in the heart of Everglades National Park that can serve to further involve the general public in Everglades issues.

**JunJie Hu**

**Research Mentor: Peter Machonis, 2007**

***Biological Control of Melaleuca in the Everglades***

The Australian paper bark tree, *Melaleuca quinquenervia*, is a notorious invasive weed that threatens the biological integrity of Florida's Everglades ecosystem. A brief invasion history and identification methods of the *Melaleuca* is explored. The project provides information on the various types of control methods, with an emphasis on biological control. A survey to assess the knowledge levels of Environmental Studies and Biological Sciences students regarding invasive plant species and biological control in South Florida is summarized in the poster.

**Karla Huertas**

**Research Mentor: Peter Machonis, 2006**

***Managing and Protecting the Water Quality of the Everglades***

The quality of drinking water, as well as the unique ecological system of the Everglades, is being jeopardized by pollution and high levels of phosphorus deposited into the environment by humans. Advanced, rigorous plans to protect the remaining Everglades, restore the water quality, and assure a clean water supply for South Florida in the extended future is the theme of this work. The current restoration strategy is appraised by inspecting documents from the South Florida Water Management District and the Florida Department of Environmental Protection. Also included are interviews from experts in the field. In addition, the degree of public environmental education conducted by the US government will be assessed. The purpose of this study is to investigate the strengths and weaknesses of the plans and techniques being implemented in order to propose a faster, more effective restoration plan that will benefit the Everglades, its wildlife, and our society.

**Jackie Huntzicker**

**Research Mentor: Irma Alonso, 2005**

***Okadaic Acid Biotransformation and Biodegradation: Isolation and Screening of Potential Marine Bacteria***

In recent years the frequency and global distribution of the ecological disruptions caused by toxic marine algal blooms has increased, posing a serious threat to the economies and public health of affected coastal communities. Okadaic acid (OA), a well-known algal polyketide toxin, is derived from the dinoflagellates *Prorocentrum lima* and *Dinophysis*. It causes diarrhetic shellfish poisoning (DSP) in humans when the toxin is ingested via contaminated shellfish and finfish. The toxin is also a powerful tumor promoter with binding sites on the skin and in the digestive system. Complex organic compounds including algal toxins are potential carbon sources for microorganisms and have been shown to undergo microbial mediated biodegradation and biotransformation. However, no studies have been done to study the possibility of microbial biodegradation of algal polyether toxins such as OA. The major objective of this study is to isolate marine microorganisms with potential OA biodegradation/ biotransformation capability. The OA used in our study was obtained via chloroform extraction from spent *P. lima* media. It was purified using flash chromatography and a Sephadex column and accuracy was assessed using a protein phosphatase assay. The next phase of the research includes starting enrichment cultures to isolate potential marine microbes with ability to grow using only the OA or structurally similar polyether molecule as the carbon source. Potential microbes will be isolated and studied further to assess their OA biodegradation efficiency.

**Desiree Hurtado**

**Research Mentor: James Riach, 2009**

***Cultivation and Uses of Medicinal Plants***

Although ethnographic and ethnobotanical studies have been conducted with peoples of the Amazon region in the past, there have been essentially no publications on the topic in some thirty years. Most rural communities lack access to medical care due to lack of money and the distance required to travel to health care facilities. The use of medicinal plants may provide a more readily available and less costly alternative to biomedical treatment of local health problems. However, no studies have documented the types of medicinal plants that are cultivated in household gardens of the communities, or traditional strategies for treating illness and disease. The goal of this research is to generate and disseminate knowledge useful for improving the health of the host communities, building on research performed in 2008. My principal objectives are to increase awareness of, and access to, traditional medicines and healing strategies.

**Desiree Hurtado, Carla Cao**

**Research Mentor: James Riach, 2008**

***Yagua Medicinal Plants: Cultivation and Use***

Food-borne, water-borne, and water-contact diseases are health problems of high risk among the Yagua people of the northern Amazon. Yet, most of their communities lack access to biomedical care due to lack of money to pay for the health care and the distance to the health care facilities. The use of medicinal plants may provide a more readily available and cheaper alternative to biomedical treatment of many health problems. However, prior to this research ethnobotanical studies had not been conducted among Yagua peoples in over thirty years and no studies had ever documented the medicinal plants cultivated in the Yagua communities of the Orosa River Basin region. This research involved the written and photographic documentation about the use and cultivation of medicinal plants in these communities. All documentation was returned to the Yagua to help build a database of locally available medicinal resources.

**Jonathan Iglesias**

**Research Mentor: Peter Machonis, 2008**

***The Beneficial Aspects of Sharks in the Everglades***

Although many of the Everglades' terrestrial predators, such as the Florida panther, have garnered a great deal of publicity and research dollars, relatively little is known of many of the larger predatory fish species residing in Everglades waters. This project focuses on the importance of the Everglades mangrove ecosystem in providing a nursery for many fish species. Although it has been poorly documented, various shark species are present among the juvenile fish populations in these mangrove nurseries. Sharks in this habitat are able to thrive and transition successfully from infancy to self-sufficient juveniles due to limited competition and a lower risk of predation. Mangroves also serve as buffers from the harsh waters of the open ocean. The beneficial aspects of sharks in Everglades ecosystem is emphasized – not only in the mangroves, but also into fresh water habitats in the Everglades.

**Tanya Jackson**

**Research Mentor: Shonali Laha, 2009**

***How the Use of Light Rail Systems Could Alleviate Traffic in Sweetwater, Florida***

Mass transit in light rail has been the transportation of choice in highly populated cities. This is evident in New York City, Chicago, Washington, D.C., London, and other cities globally. At present the City of Sweetwater in Miami-Dade County has been challenged with finding options to alleviate the traffic congestion problem it faces. Florida International University's main campus and Engineering center are two of the primary institutions that contribute to population density in the area. The opening of FIU's medical school will cause even greater traffic jams and longer commute times in and around the Sweetwater community. Currently the construction of a light rail system proposal may help alleviate traffic problems in the area. The technology and upgrades in light rail train transportation have improved over the years to make it competitive with other types of mass transit, such as buses. The importance of the light rail, the priority that is placed on the system's use regarding the social and environmental effects for implementing such a system, and its effect on the commuters and residents to and from the area are important factors that needs to be evaluated. The rising cost of fuel from oil is also placing low-budget college students in a dilemma, choosing between investing in an affordable education or obtaining a low paying job immediately upon graduation from high school. However, it is recognized that a college degree opens the way to better jobs and South Florida needs more university graduates in an increasingly competitive global job market. It is my belief and intention to support efforts that will persuade the university's administrators to take an active role in encouraging the local governments to make the better choice, environmentally and socially, when investing in the use of a light rail transit system to and from the city of Sweetwater.

**Melissa Jahangiri**

**Research Mentor: Eric Crumpler, 2006**

***Biocompatibility Testing for Bone Substitute***

A need exists for the development of a bone substitute that not only possesses the strength and material properties of native bone, but that also is biocompatible. Biocompatibility testing was performed on material substrates containing carbon nanotubes (CNT) and/or hydroxyapatite(HAP). HAP, (Ca<sub>5</sub> (PO<sub>4</sub>)<sub>3</sub> OH), the mineralized component of native bone, provides the compressional strength of bone. The carbon nanotubes are also present in the substrate to provide additional strength. We cultured both cardiac fibroblasts (which have the ability to mineralize) and human osteoblasts (bone-forming cells) in Dulbecco's Modified Eagle Medium (DMEM) supplemented with 10% fetal bovine serum (FBS) and 1% Penicillin/Streptomycin. The cells were seeded at a density of ~3000 cells/cm<sup>2</sup> and were grown under standard culture conditions (37o C and 5% CO<sub>2</sub>-95% air) onto the bone substitute substrates that either contained HAP and CNT or HAP only. The substrates were then fixed with a 25% formalin/PBS solution and were further prepared for scanning electron microscopy (SEM) analysis. We anticipate that both of these substrates will be biocompatible as demonstrated by normal cellular attachment and morphology of the osteoblasts and cardiac fibroblasts.

**Sky Jarrett**

**Research Mentor: Leslie DeChurch, 2006**

***Implications of Gender for Constructing High Performance Work Teams***

Two trends being faced by modern organizations are the increased reliance on work teams and the rising numbers of women entering the workforce. The successful utilization of teams will therefore require an understanding of how gender composition affects teamwork. This study develops a conceptual model linking gender to critical inputs and processes predictive of effective teamwork. We use the input-process outcome model of team effectiveness as a basis for understanding how gender influences effective teamwork. Inputs examined include emotional intelligence and personality, while processes include leadership, responsiveness to feedback, and conflict management. We begin by identifying empirical work on gender with implications for teamwork, and then develop propositions regarding the role of gender on critical team processes and outcomes. The model is then used to suggest practical implications for constructing high performing work teams in organizations.

**Michael Jimenez**

**Research Mentor: Irma de Alonso, 2007**

***Homosexuality and Human Rights Abuse***

This study aims to disseminate information on the human rights atrocities being committed against GLBT individuals throughout the world in the past fifteen years. The research will accomplish this by showcasing certain specific atrocities as well as laws which by their conception and wording would constitute an abuse of human rights, if enforced.

**Michael A. Jimenez, Jr.**

**Research Mentor: Elisabeth Prugl, 2008**

***LGBT Rights in Poland: Failure?***

There have been clear human rights violations against LGBT individuals in Poland since the turn of the century. This paper seeks to determine why the response to said violations has, too many, appeared to be inadequate. To determine this, I will be looking at three factors: the nation-state of Poland, the EU and accession, and the international human rights protection system of which Poland is a part.

**Robert Jimenez**

**Research Mentor: Peter Machonis, 2005**

***American Environmental Policy: The Everglades Dimension***

It is common knowledge that environmental issues are interconnected. Yet, environmental issues also contain political dimensions. This project analyzes the environmental policy of the US government and its effect on the Everglades. US federal policy aimed at multi-national resolutions to such issues like the Kyoto Protocol have profound effects upon every individual habitat in the world, including the Florida Everglades. The project's goal is to gain an understanding of definitive financial, political, and scientific intricacies that have come to characterize US policy towards the Everglades. Emphasis is placed on the federal government's dealings with other nations and how this affects the Everglades and the domestic collection of related environmental issues pertaining to "the river of grass."

**Robert P. Jones**

**Research Mentor: Irma Alonso, 2007**

***Human-Computer Interfaces***

Computers are evolving rapidly and have become a focal point in homes. Even though the use and look of computers have changed dramatically in the past decades, the interface between human and machine has been the same keyboard and mouse since Macintosh came out. Perhaps it is time for a new interface, one that takes full advantage of the uses of computers today. People use computers for web browsing, data entry, music, videos, gaming, television, and a plethora of other things. We need a device that takes the keyboard and mouse interface a step further to take full advantage of a lot of these uses of the computer, especially since the computer is moving toward becoming the most important device in the home. I propose an all-in-one device that makes the computer interaction easier for its multiple roles.

**Erica Kapadia**

**Research Mentor: MaryLou Pfeiffer, 2009**

***The Ethics of Organ Transplantation***

Organ transplantation is an example of a recent technological advancement that has impacted many lives just within the past fifty years. The first successful kidney transplant occurred in 1954, when the kidney of an identical brother was transplanted into another and functioned for eight years. Since this date, thousands of organs have been transplanted to prolong a person's life. Although organ transplantation is a major advancement in modern surgery, there are many ethical dilemmas and controversies that arise with this procedure. Some of these issues include the organ shortage, sources used for transplantation, eligible organ recipients, how organs are distributed, the cost of transplantation, legal advancements, risks of organ transplantation, the "black market" for organs, and the future of organ transplantation. Along with an investigation of these issues and concerns, the opinions of a random sample of students at FIU (by survey) will be investigated on the topic of organ transplantation. In addition, an interview with an organ donor and/or recipient will be conducted. Issues that will be discussed are the effect of the transplant on everyday life and wellness and emotional health.

**Sheala Khan**

**Research Mentor: John Kneski, 2006**

***Arab Influences on Spanish Architecture Post-1492***

In the seventh century A.D., a new religion arose in the Arabian deserts that would change not only the course of world history, but bring to the world new and enlightened concepts. One example was the Umayyad caliphate's expansion into Europe and its great and wondrous settlements in Spain. While the rest of Europe was suffering the pains of the Dark Ages, Spain was a paradise filled with water fountains, libraries, and bathhouses. It was the flourishing life of Spain that gave birth to some of the world's greatest mosques and introduced new and sometimes improved concepts in architecture, such as the arch. My paper tracks the architectural journey of the Muslims in Spain throughout their 800-year-long occupation of the area and their lasting influences after 1492, when the last Muslim ruler was expelled from Spain. The influence of the Spanish Muslims continues to live in architecture in the colonies that were founded by Spain.

**Marlon Kilgour**

**Research Mentor: Peter Machonis, 2005**

***Eight Billion Dollar River of Grass: The Everglades Restoration***

We will construct a flowchart for the \$8 billion from Federal and State government funds that was proposed to be spent in the Everglades Restoration Project by the South Florida Water Management District, Army Corps of Engineers and other partners. The project will highlight the channels these dollars would be awarded to on a competitive basis among agencies in Florida who propose to be part of the restoration project. My final component will emphasize how Floridians would benefit from the \$8 billion restoration project, given the ever-increasing population and its future water dependence on the River of Grass.

**Helen Koshal**

**Research Mentor: John Kneski, 2006**

***Art's Metamorphosis in the Mediterranean***

The art of our past followed a strict parallel line with the social advancement of the people who made it. The art produced in the Mediterranean, in particular, is a reflection of the social and historical development of that region. Thus a primitive social structure produced uncomplicated forms with simple media, while a society that flourished produced lavish works of art on an impressive scale. In my presentation I will show examples of the art created by several different civilizations. These art works will demonstrate the materials, textures and stylistic devices that the societies employed.

**Masako Kubota**

**Research Mentor: Dennis Wiedman, 2008**

***Searching for "Reciprocity" at Big Cypress: Patchwork and the Evolving Roles of Seminole Women***

In my research I will focus on the contemporary Seminoles, and attempt to cover their history, social organization and their lives, especially "reciprocity" between tribe members. Also, I will cover the evolving roles of the Seminole women who developed patchwork as an artistic traditional craft and as one of the survival tools in the 20th century.

**Chuljan "Chad" Kwon**

**Research Mentor: Lidia Kos, 2006**

***Cardiac Neural Crest Cells and Their Role in Purkinje Fiber Development***

The heartbeat is regulated by the cardiac conduction system (CCS), a specialized group of cells transmitting electrical impulses around the heart chambers. During development, ventricular CCS cells originate from embryonic cardiomyocytes and not from the neural crest. Nonetheless, discoveries in chickens implied that the cardiac neural crest (CNC) cells contribute to the proper development of the ventricular CCS. To analogize this phenomenon in the murine species, the Splotch mouse mutant (Pax3Sp), in which the CNC cells do not migrate to the heart, was used as a mammalian model system. Homozygote mutants (Pax3Sp/Sp) are embryonic-lethal on embryonic day 13 (E13), and can be phenotyped by spina bifida and exencephaly. Pax3Sp/+ mice were crossed to obtain wild type Pax3Sp/+ and Pax3Sp/Sp embryos. Comparison of hematoxylin and eosin-stained histological sections showed less trabeculation in E12.5 cardiac ventricles of Pax3Sp/Sp. Furthermore, immunofluorescence analysis with the Purkinje fiber marker Cx40 showed a qualitative difference between wild type and mutant hearts. Quantitative analysis indicated that Pax3Sp/Sp ventricles have fewer Cx40 expressing cells as well as less Cx40 being expressed per cell when compared to wild type ventricles. A proliferation assay is currently being conducted to identify the mechanism underlying the reduction in the number of Cx40 expressing cells in the mutant hearts. These results convey a possible role for CNC cells in proper formation of the CCS.

**Jonathan Lanzas**

**Research Mentor: Peter Machonis, 2008**

***The Comprehensive Everglades Restoration Plan: What's Taking So Long?***

The Comprehensive Everglades Restoration Plan (CERP) was passed by Congress in 2000 as a long-term plan to restore the Florida Everglades. With a project timeframe of thirty years, CERP was to achieve its goals by purchasing more land, improving water flow and quality, and completing related projects. Many aspects of the plan's implementation have lagged far behind the initial timeline, however. Through interviews with Everglades National Park rangers, hydrologists, and scientists involved with the restoration, I will determine how this project has proceeded so far, what difficulties have been encountered, and the chances of successfully improving the Florida Everglades.

**Ricardo Antonio Largaespada**

**Research Mentor: John Kneski, 2007**

***How the Classical Ideal in Sculpture Has Allowed for the Exploration of Abstraction and Realism in the Mediterranean***

Within classical antiquity, several civilizations emerged, coexisted and combined with each other as the conquerors added territories to their empires. This project focuses on the sculptures of the Etruscan civilization and their unparalleled relation to the revival of Classicism in the Enlightenment Period. Although there is little information about the Etruscans' origin, they developed sculptures of aesthetic and impeccable craftsmanship that eventually led to the concepts of realism and abstraction in sculpture. These concepts had a major influence on the works of artists during the Enlightenment Period and today's Modernism. Due to the vast information on artists of the period, the research will concentrate on Auguste Rodin's sculptures and their relationship to both abstraction and realism. In addition, two selected works from the Wolfsonian Museum will represent sculpture in the modern era.

**Deana Lawrence**

**Research Mentor: Dona Greenwood, 2008**

***Assessing the Knowledge, Exposure, and Perceptions of South Florida Undergraduate Students on the Role and Importance of the Inclusion of Sustainable Practices***

There is an increasing awareness of the importance and role that sustainability plays in our everyday lives. My objective was to survey and assess current knowledge, exposure, and perceptions of sustainable practices for culinary and dietetics and nutrition college students. The outcome was to be used to evaluate the need to incorporate sustainable concepts into their programs' curricula. A survey was developed and administered to 131 students in three different colleges. Sustainable practices were defined and divided into three sections, including consumable products, workplace practices, and infrastructure policies. Each section was divided into subsections: locally grown foodstuffs, organic foods, food recovery practices, recycling, and energy management. The data indicate a positive desire to incorporate the majority of these concepts into their programs' curriculum and future use in their workplaces and practices.

**Deana Lawrence**

**Research Mentor: Mary Lou Pfeiffer, 2007**

***Nutritional Genomics: How Will It Affect the Way You Eat?***

Nutritional genomics is the study of our individual genes and their variations applied to what we eat. These variations create slightly different nutrient requirements between individuals, which can lead to different susceptibilities to disease and conditions. The practice of matching food choices to our genes in order to minimize risk of disease and optimize our potential for health is rapidly developing. This paper examines the social and ethical implications from several points of view, focusing on the potential benefits and perceived risks of widespread implementation. Research has been reviewed on the effects on the general public, including acceptance and psychological concerns, the marketplace and possible capitalists' conflicts, advancement of food science technology, government and private institutions, and regulatory agencies.

**Allison Jade Leonard**

**Research Mentor: John Kneski, 2006**

***Development of the Sardinian Language***

Coastal cities and countries along the Mediterranean Sea tend to attract diverse populations and to be vulnerable to foreign cultural persuasion. However, the island of Sardinia was able to retain much of its original language despite the variety of cultures and languages that passed through it. This paper explores the malleability of language in the Mediterranean by highlighting Sardinia, and analyzes the role geography and politics play in its development and influence. The study evaluates the historical strength of the language, and comments on its present day susceptibility to obsolescence.

**Nadia Lima**

**Research Mentor: Helen Cornely, 2007**

***Today's Medical Malpractice Insurance Crisis: The Solution***

Medical malpractice insurance covers expenses accrued by physicians and hospitals related to medical malpractice claims. These policies provide coverage for payment to claimants and legal expenses. The purpose of this study is to analyze factors contributing to increased medical malpractice insurance rates by drawing on government and other reports, as well as assessing ways to lower these rates. Since inflated medical malpractice insurance rates decrease the quality of healthcare, it is imperative to find a way to reduce medical malpractice insurance rates, thereby increasing the quality of healthcare. This review will attempt to find ways to reduce medical malpractice insurance rates.



Student Research & Artistic Initiative Program  
Compendium of Undergraduate Research Projects: 2005-2009  
The Honors College at Florida International University, Miami, Florida

**Mario Londono**

**Research Mentor: Peter Machonis, 2008**

***Candy-Coating Everglades Restoration***

The main premise of this project focuses on efforts to restore the Everglades by the federal and state governments. Previous government-sponsored restoration programs will be analyzed along with their environmental impacts. The major focus of this project, however, will be on the Everglades Agricultural Area south of Lake Okeechobee, with an in-depth examination of the environmental and political impacts of US Sugar's proposed buyout by the state of Florida.

**Alexandra Lopez**

**Research Mentor: John Kneski, 2006**

***Egyptian Influence on the Mediterranean, Particularly in Imperial Rome***

For so much time, it has been universally acknowledged and accepted that Greece was perhaps the single most important influence on classical Roman civilization. There are many parallels between the two civilizations, from the architectural styles to the mythological deities ornately displayed throughout Rome and Athens. However, Egypt has also been a source of great influence. This influence is especially palpable in Egyptian-inspired Roman architecture, religion, and culture. In particular, it is apparent in the numerous obelisks throughout Rome and nearby. Most of these pagan obelisks are erected in front of Churches, a antagonistic symbolic. This project investigates the influence of Egypt on the use of these structures.

**Sarah Lowe**

**Research Mentor: Anthony McGoron, 2006**

***Testing a Novel Respiratory Gating Design for Motion Tracking in PET Imaging***

Positron emission tomography (PET) is a nuclear medicine medical imaging technique that produces a 3D image of the functional processes of the body. Widely utilized in cancer research, clinicians will often use PET scans to analyze the size, shape, and location of tumors. Respiratory movement causes motion artifacts in the produced images, resulting in diminished image clarity and tumor diagnosis inaccuracies. A novel gating process that reduces these motion artifacts has been devised, where the respiratory cycle of inhalation and exhalation is tracked or "gated". This investigation involved further testing of this gating process using more physiologically accurate models. The objectives of this study involved (1) designing and building a lung/tumor phantom containing an imitated tumor that simulates movement of the thoracic cavity (on which to test the process) and (2) generating actual and simulated data using the respiratory gating process. The testing was done in order to prove that the phantom design under consideration correctly mimics physiological movement and that the gating process successfully reduces its effects. The pending results of this study include a physical prototype of the designed phantom (along with its design considerations) and analysis of the generated data.

**Sarah Lowe**

**Research Mentor: Darden Pyron, 2005**

***The Analysis of Oak Ridge Soil Samples to Determine the Absorption and Desorption Properties of Mercury***

For twenty years the Department of Energy has funded projects to reduce the mercury content in the soil of Oak Ridge, TN. Oak Ridge was one of three national sites dedicated to producing the world's first atomic bomb, and the waste products from this endeavor have contaminated the area's surrounding soil with toxic levels of mercury. This study focused on the various ways that soil samples taken from the site were processed and analyzed for their mercury content. Measurements of the approximate moisture contents and the concentration of mercury were taken. The soil samples were taken from three different re-sampling sites: the Bruner site, the Horizon Center site, and the Mullins Car Wash site. The mercury measurements were taken using the DMA-80, a direct mercury analyzer that will detect mercury in both liquid and solid samples. Leaching tests were also conducted on the soil samples. The overall results presented in this experimental study show that there are still high levels of mercury present in the Oak Ridge soil samples and small fractions of this mercury are available for de-sorption.

**Samantha March**

**Research Mentors: Eric Wagner & Chris Nuemann, 2006**

***The Co-occurrence of Substance Use and Interpersonal Violence in African American and Hispanic Juveniles***

Adolescent drug use / abuse and juvenile violence are pressing social problems in America. Moreover, an extensive literature base has documented significant associations between substance use / abuse and juvenile violence. Compared with the general population of adolescents, juvenile offenders who are more likely to use alcohol, tobacco, and other drugs, are more likely to have substance use problems, and initiate substance use at earlier ages. This project focuses on the co-occurrence of substance use and violent behaviors among participants in a NIH-sponsored study of adolescent substance

abuse treatment. Data are derived from the Time Line Follow-Back (TLFB) Interview, a retrospective daily diary in which participants report the occurrence of alcohol, marijuana, and other drug use, and interpersonal violence. The analysis of data taken from 200 African-American and Hispanic participants was further examined to find the degree to which substance use behaviors precede and predict violence, as well as the degree to which violence precedes and predicts substance use. With further scrutiny, it was found that the co-occurrence of these behaviors varies by race/ethnicity and nativity.

**Cristian Joel Marino**

**Research Mentor: John Kneski, 2006**

***The Influence of Dominican Friar Girolamo Savonarola on Renaissance Thinking***

The name Girolamo Savonarola is not well remembered these days. However, the Dominican friar who preached during the reign of Pope Alexander VI, the infamous leader of the Borgia clan, was so influential in his time that a revolution sparked by his vivid sermons ousted the Medici from Florence and helped establish a republican government. Though eventually martyred, Savonarola's strict interpretation of Biblical law and fiery prophecies left an influence on his countrymen that struck a blow on the growing humanist movement. In my research, I will point out these influences, particularly in the field of music as represented by church lauds and in paintings, particularly the works of Botticelli and Michelangelo. By pointing out the influence of the great preacher on well remembered historical figures, I will try to prove that the life of Girolamo Savonarola is not one that should be forgotten.

**Christopher Martinez**

**Research Mentor: John Kneski, 2008**

***WPA Art in the Modern World: A Closer Look at the Work of Alexander Sambugnac***

This project will present the works of Alexander Sambugnac and elucidate the WPA's success in creating an awareness of American Art. Many artists from various periods of time remain largely unknown to the general population of the modern world; during the Great Depression, the WPA sought to create a program to commission artists and educate Americans about art. Alexander Sambugnac, a Yugoslavian sculptor and artist of the early twentieth century who moved to America, is a WPA artist. Two of his pieces, "Love and Hope" and "Wisdom and Courage," are presently located in the Miami Post Office and Courthouse. This research will focus on a variety of Sambugnac's works.

**Ron Mathew**

**Research Mentor: Mary Lou Pfeiffer, 2008**

***Assessment of Environmental Tolerances on the Reagents of Point-of-Care Testing Devices and Their Relevance to Disaster Preparation***

Point-of-Care Testing (POCT) is diagnostic testing at the site of patient care and is particularly seen at sites where emergency and disaster responses occur. Therefore, reagents such as test strips and cartridges for POC devices may be subjected to extreme temperatures. The goal was to assess the performance of glucose meters and a portable blood gas analyzer after reagents were thermally stressed, and to compare results to room temperature. Other associated characteristics studied were turnaround time and bioethical issues. Test strips for three glucose monitoring systems (GMS 1-EC, GMS 2-EC, GMS 2-S) and cartridges for a handheld blood gas analyzer (HHBG) were subjected to either -21°C or 40°C temperatures for up to 4 weeks. Two-sample t-test and paired differences for the means were used for data analysis. Exposure of reagents to extreme temperatures over time can yield inaccurate results; degree of inaccuracy can depend on the duration of stress upon reagents.

**Jose Matteo**

**Research Mentor: John Kneski, 2008**

***Bajian Progressions: An Integrated Look at the Pataphysics, Nuclear and Pop Art Movements with Reflections on Inter-Gender Roles in the Late 20th century***

From Baj's Les Modeles, one can extrapolate much about the lore of the various movements he was a part of and how progressively he was able to integrate the different styles and arrive at definitively opinionated views on subject matter, ranging from the rights of government, the rights of the governed and the stance of the governed in respect to their government. The developed research of the "Baj" books provides an introduction to the works of Baj and the progression of his artistic view. The further backdrop of the Pataphysics will introduce some of the ideals of the pataphysical philosophy and how this philosophy feeds into pop art and surrealist efforts. This project will seek to answer the message in Les Modeles, in which a bizarrely monstrous representation of a man stands in regards to women in his surroundings and these women respond to him. From the painting we can note allusions to social strata and the representation of Seurat's

pointillism in a more continuous sense. Through exploration of these allusions and movements, the hypothesis that the state of inter-gender relations was rapidly changing will be addressed, and through the understanding of that model, one can contrast that state with today's relations and with those that preceded it.

**Ana Clara Mauro, Milvia Suarez**

**Research Mentor: John Kneski, 2005**

***"In the Manner of"; Expressing Research Through Artistic Exploration***

The project asks the question, How can artistic exploration serve as a gateway to rigorous research? This year-long project on aesthetic expressions of "authority and values" in Mediterranean cultures merges rigorous historical research with formal artistic expression. This includes combining traditional research methodology with an exploration of historic artistic techniques, which serve as the vehicles for this multi-layered investigation. Students demonstrate their research findings by creating art pieces that are displayed in a public exhibition for the local community. A narrative analysis of the piece, written in the third person, is prepared by each student as a self-critique of their own art work to generate a catalog. This project discusses combining rigorous interdisciplinary research and artistic expression as potentially powerful ingredients in Honors education.

**Marialina Mejia, Brent Cottrell**

**Research Mentor: Irma Alonso, 2008**

***Trade and Developing Countries***

Poverty is a condition found in all developing countries, but the role trade plays in reducing or increasing the level of poverty generates considerable debate. Free trade drives a country to focus on what it does best, and creates new jobs that offer a better wage rate. However, there is a concern about income growth of the middle class and low class people. Some claim that people's lives are not improved by increases in GDP and trade, while others say more trade is the answer. In our research, we conduct a cross-sectional analysis that looks at the relationship between trade per capita and human development standards as measured by the Human Poverty Index (HPI) provided by the United Nations Development Program (UNDP), where the HPI focus is on three areas of deprivation: length of a healthy life, knowledge, and standard of living.

**Fiorella Melendez**

**Research Mentor: Irma De Alonso, 2006**

***Oral and Maxillofacial Surgery***

This investigation was focused on the past, present, and future of oral and maxillofacial surgery, a field of dentistry that encompasses the treatment and diagnosis of diseases and injuries in the area of the face, neck and jaw. It also investigates the process and requirements to become an oral and maxillofacial surgeon and the associated career opportunities. Oral surgeons became prominent after World War II, when dentists were not only required to extract teeth, but worked together with plastic surgeons to reconstruct soldiers' faces. The special team required to do these procedures included a plastic surgeon, a dentist, an anesthesiologist, a nurse, and supporting personnel. Today, a person who wants to become an oral and maxillofacial surgeon needs to be accepted to a dental school and work towards the completion of a DMD (Dental Medicine Degree) for the next four years and seek acceptance into a graduate program and work on residency. Currently, oral and maxillofacial surgeons practice different types of surgery, from the extraction of wisdom teeth to dental implants, reconstructive surgery, facial trauma, orthogenetic surgery, and even oral tumors or cancers, earning an average of \$150,000 a year in the state of Florida and \$246,000 annually in Washington State. The demand for oral and maxillofacial surgeons has increased with the increment of cosmetic surgery mainly as a result of the intense criticism of the physical appearance, so called "ideal body" promoted by the media and followed by society all around the world.

**Eladio Mendez**

**Research Mentor: Kenneth G. Furton, 2009**

***Is There a Correlation in VOC's Found in Individuals Across Blood, Urine, Saliva, and Scent?***

Headspace Solid Phase Micro Extraction (HS-SPME) coupled with Gas Chromatography Mass Spectrometry (GC-MS) has become extremely useful in the extraction of Volatile Organic Compounds (VOCs) from biological matrices. This is because high molecular weight compound interferences are greatly reduced, allowing for small VOCs to be extracted from the headspace of the compound. Work in this area has involved matrices such as urine, breath, and blood. [1-4] Recently, SPME has been used to determine VOCs present in human scent from hand and armpit odor. [5] Core, primary compounds were identified for human scent, and it was determined that the various compounds differ in ratio from person to person, creating unique scent profiles for each individual. [6] This experiment aims to correlate VOCs found in individuals across

blood, urine, saliva and scent. The study will seek to use collection methods currently used in industry. Although no previous research has tried to correlate VOCs across the various biological matrices, preliminary investigations on common VOCs across breath, blood, and urine have been conducted. In these, Isoprene, Toluene, Phenol, Acetone, and 2,2,3,3-tetramethyl Butane were found in all three matrices. [7] Preliminary experiments have been conducted using Toluene, Phenol, and Acetone to determine limits of detection for and best exposure times for HS-SPME method for blood collection.

**Eladio Mendez**

**Research Mentor: Suman Kakar, 2008**

***Are Teachers Biasing the Moral Development of Adolescents?***

This research examines possible bias of moral development of adolescents by academic institutions. Understanding of the moral development of adolescents has remained largely unknown because of the large range of variables affecting this population, as well as the inability to test these independently. Because of the diminishing authority of family influence, we theorize that academic institutions will exert increased influence on adolescents. This presents a unique situation as high school science instructors, in the absence of objective academic curricula or proper training on objectively tackling bioethical issues, could be biasing the moral development of their students. Data regarding ideological stance on the stem cell issue will be gathered from both students and their instructors. Significant ideological similarities are expected and will support the existence of moral biasing in public schools. This bias would give insight into the moral development of adolescents, as well as shed light into new challenges in future curriculum development and instructor training.

**Sabrina Mendez**

**Research Mentor: Lindsay Ham, 2006**

***Social Experiences and Drinking in the Early College Years***

Alcohol consumption is highly prevalent in late adolescence, namely during the college years (Ham & Hope, 2003). During adolescence, many leisure activities take place in bars, clubs, parties, and settings in which risk behaviors (e.g., drinking) and the development of peer relationships come together (Traen & Nordlund, 1993). As a result, risk behaviors are associated with peer relationships. There is not sufficient research examining the quality of adolescents' social lives (Gilman, 2001) and even less on the association between alcohol consumption and adolescents' social lives. Therefore, the purpose of this study is to examine the relationship between binge drinking and social activities in the early college years. The sample includes 303 Florida International University students, ages 16-20 (M= 18.5), who have been recruited to participate in a study examining social variables and drinking in the early college years. Participants complete a self-report questionnaire regarding demographic information, social activities, life satisfaction, and alcohol use. It is hypothesized that underage non-binge drinkers will report a wider range of social activities and a higher level of satisfaction and importance with social variables than will binge drinkers. In addition, it is hypothesized that binge drinkers will drink more often in social situations.

**Miguel A. Mendoza**

**Research Mentor: Charles H. Bigger, 2008**

***A Mechanism of Alloimmune Response in Primitive Phylum: Apoptosis in the Gorgonian Coral *Swiftia Exserta****

Previous studies on the Gorgonian Coral *Swiftia exserta* (Cnidaria, Anthozoa) immunology have revealed specific intraspecific (alloimmune) responses to foreign tissue (Salter-Cid and Bigger, 1991). These findings suggest that primitive forms of alloimmunity may have existed prior to the deuterostome/ protostome phylogenetic split. This study focused on the determination of an apoptotic associated immune response in allograft tissue rejection in *S. exserta* using the flow cytometry assay Guava PCA™ TUNEL Assay to indicate and quantify an apoptotic response in induced cells. Following a five-day induction period under closely monitored conditions, dissociated cells from normal, autograft (self-graft) and allograft tissue samples were examined for the presence of apoptosis. Flow cytometry data depicted pattern shifts in allograft samples indicative of apoptotic activity. The results from the TUNEL Assay are supportive of the hypothesis of apoptosis as the mechanism of tissue death in the allogeneic response of the Gorgonian coral *S. exserta*.

**Jenny Millet, Federico Baez**

**Research Mentor: M.O. Thirunarayanan, 2008**

***Teen Suicide: A Comparative Analysis***

Teen suicide is a very serious problem today, as it occurs in every region of the world. However, the number of suicides by teens does vary drastically among different countries. These variations are caused by a plethora of factors that are typical to any specific country or region of the world, but the most influential factors seem to be the socio-economic situation of the country or region in question and the culture and value system of such country or region. The educational system of the

country also tends to influence the rates. For this investigation, three countries were researched, along with their respective teens' suicide rates and a possible explanation for such rates. It was concluded that the factors that most influence the teenage suicide rate for any specific country are mostly related to the country's economic condition as well as to the culture and competition levels for that country.

**Lilibeth Miranda**

**Research Mentor: John Kneski, 2007**

***How the Architecture of Italy and Morocco influenced the Architecture of the United States in the 20th Century.***

This research has been done using three different countries as the main focus: Italy, Morocco, and the United States. We will analyze how the architectural style in Italy and Morocco influences the style in the modern United States. We will compare and contrast the villages of Italy and Morocco according to their building distribution and their most relevant features. Also, we will study the colors used in the construction of the villages, and how Italy and Morocco blend them to create a style that identifies their cultures. We will look at the materials used to build the villages and how they are similar or different in each of the two countries. Moreover, we will look at the significance of the buildings in the villages of Italy and Morocco. Finally, we will use that information to sketch the relationship between the architectural style used in those two countries in the Mediterranean and the architectural styles used in modern edifices in the United States and how the Mediterranean style influences U.S. architectural style for buildings such as hotels, houses, and restaurants.

**Camilo Montoya**

**Research Mentor: Kenneth I. Henley, 2009**

***The Legal/Political Analytic Philosopher: Richard Dworkin and His Stance on the Philosophy of Law***

This research will be directed towards the legal/political analytic philosopher Richard Dworkin, and especially his interpretative stance in the realm of philosophy of law. This will be undertaken using primary sources and other lesser known works. Dworkin's approach to philosophy of law will be compared and contrasted to other rival stances of interpretation, most notably of interpretation of the U.S Constitution. The interpretative stances of Justice Scalia (textualism) and those belonging to the school of the "living constitution," polar opposite stances on the issue of interpretation, will be contrasted and compared with Dworkin's approach. This will culminate in an analysis of Supreme Court decisions and opinions known to be extremely controversial. We will see how and why using a strictly Dworkinian approach to these Supreme Court cases would give us possibly different decisions and opinions. In some cases we expect congruence with the decision, though maybe not the same argumentation for such a decision. In others we expect extreme divergence. Dworkin's idea of the interpreter as in the position of a chain novelist while interpreting law will be the primary concept explored and integrated.

**Alexandra Moore**

**Research Mentor: M.O. Thirunarayanan, 2009**

***A Study on Bias in the Classroom***

Biases exist today in various forms throughout our society and the world. They are both a result of society and part of the societal framework. In the domain of public education, however, teachers are urged to manage their classrooms free from bias in an attempt to provide all of our children with an equal opportunity to learn and grow. Due to this need for equity, education programs at the university level explicitly teach how to manage a classroom free of biases. This study will compare biases held by collegiate students in various majors and will help reveal whether students in the College of Education are less likely to demonstrate biases than their collegiate peers. The results will help to reveal the success of FIU's dissemination of awareness and sensitivity of gender and ethnic biases to its students and future teachers.

**Randol D. Mora**

**Research Mentor: Ivelaw Griffith, 2006**

***Sex Tourism: A Comparative Analysis of Two Caribbean Nations***

Nations in the third world face various challenges to development, from economic barriers to obstacles in health care. These countries struggle to establish a stable standard of living for their citizens. As a result, many citizens in these countries attempt to raise their standard of living and pursue employment through alternative means. One such method is to become a part of the sex tourism industry. Though this economic sector exists in varying degrees of legality, it has become increasingly popular across the world, and most specifically in the Caribbean. This paper will attempt to dissect the socio-economic factors behind, and resulting from, sex tourism. More specifically, matters such as HIV/AIDS, racism, and poverty will all be discussed as they relate to this industry. The research will compare and contrast two Caribbean countries, the Dominican Republic and Trinidad and Tobago, where sex tourism is a year-round source of income and a seasonal

endeavor, respectively. These countries were chosen to reflect different approaches and methods in sex tourism and as a result different cultural norms and a higher degree of socio-economic development in Trinidad and Tobago, where the laws are more strictly enforced.

**Elizabeth Morell**

**Research Mentor: Darden Pyron, 2008**

***Effect of Grotesque Humor in Supermarkets***

Reactions of grocery shoppers (N=16) were observed in an unusual, grotesque situation to identify participants' reactions as negative (avoiding eye contact, frowning, not laughing/smiling, indications of no humor) or positive (laughing, smiling, asking questions, commenting, overall appreciation of joke) and to identify if there is a gender difference in reactions. The participants' ages varied but they were middle-aged adults (30-50). This experiment lasted just under 3 1/2 months with two situations attempted. The first situation was setting a gag hand at the top of a grocery cart. The second situation was to "drop" the hand face down and record the facial expressions made by the people who picked up the hand. The findings confirmed that there is a difference in reactions between men and women in grotesque humor.

**Jonathan Moser**

**Research Mentor: John Kneski, 2006**

***The Effect of Sparta's Isolated and Traditional Culture on Empire over 500 Years***

Sparta was renowned for its warlike nature and the strict militaristic manner of its society. It was this tradition that allowed Sparta to become a powerful empire, yet after 500 years of isolation Sparta became unable to deal with a changing world. This strict traditionalism moved from allowing Sparta to become a powerful nation to becoming the sole means of its survival as an independent state. Despite its static cultural approach, Sparta was able to endure the Athenians, Persians, Thebans, and Macedonians, yet failed to collect the opportunities that such resilience had afforded. What could have easily been a Sparta-dominated Mediterranean never evolved, not because of circumstance, but because the Spartan empire was not engineered to allow this. After extensive research on the history of the Spartan state, it was evident that Sparta's aggressiveness was unlike other traditional states during that time, in that the goal of war was never pursued towards dominion abroad.

**Andrea Muranda**

**Research Mentor: Irma Alonso, 2007**

***Opportunities, Prostitution, Sexual Trafficking: The Reality of Impoverished Women of Developing Countries***

My paper explores how poverty and lack of employment and opportunities make up a lethal combination for women in underdeveloped countries, leading them into sexual trafficking. It discusses the problem of sexual trafficking, the harmful influence of prostitution, and pornography. It also offers solutions to bring an end to this sad reality.

**Travis Murphy**

**Research Mentor: Suman Kakar, 2008**

***Assessment of Primary Care Physicians Willingness to Treat Patients with HIV/AIDS in Miami-Dade County, Florida***

The accessibility and provision of treatment for HIV/AIDS patients in Miami-Dade County is presumed to depend on local primary care physicians' willingness to manage their treatment. This study examines the effects of a primary care doctor's age, gender, race, typical population served, place of training, experience during training with HIV/AIDS patients, practice location (within Miami-Dade County), religious affiliation, sexual orientation and HIV positive status on that doctor's willingness to manage care for HIV/AIDS patients. The effects of a doctor's willingness to treat HIV/AIDS patients is related to accessibility of care for these patients and is expected to indicate the need both for more accessible care and doctors willing to manage this complex disease.

**Daniel Narain**

**Research Mentor: John Kneski, 2006**

***The Impact of the Ancient Olympic Games in Modern Greece***

The Greeks have influenced the way we think and how we govern ourselves; therefore, it is important to understand and be aware of their culture and values, which were once almost lost in Greece. This study attempts to discover how the ideals exhibited by the ancient Olympic Games have contributed to the formation of aesthetics, values, and authority in modern-day Greece. I investigate the impact and meaning of the ancient Olympics and how those ideals helped the reformation of Greece after its independence from Turkey. This study also looks at the rebirth of the modern Olympic Games and how they were used as a tool to reconstruct the struggling Greek institutions, economy, and infrastructure. The connections between

the ancient Olympics and modern Greek culture prove these old traditions and values have become the foundation on which modern Greece has built itself, and thus helped with the creation of its new national identity.

**Justine Naylor**

**Research Mentor: Christopher Rice, 2009**

***An FIU Campus Program on Substance Abuse Issues and Promotion of Healthy, Risk-Free Behavior***

The Center for Research on U.S. Latino HIV/AIDS and Drug Abuse (CRUSADA) is a research, education, and community outreach center located at FIU. I will be working on their research team to help implement a pilot youth education program on the FIU campus that will educate and involve students in substance abuse issues and promoting healthy, risk free behaviors. The program is called "You Gotta Know!" and will recruit student ambassadors who will design the campaigns that will be implemented on campus. In addition, I will be researching alcohol use and how it is viewed as an integral part of the college student ro

**Justine Naylor**

**Research Mentor: Daniel Alvarez, 2008**

***Pre-Marital Counseling and Its Effect on Divorce***

Divorce has become a common phenomenon in our society for many reasons. Yet, some people still enter into the institution of marriage with high hopes and dreams. This presentation will help determine if pre-marital counseling is a smart choice to prepare couples to handle the work their marriage will become. Divorce is most likely to occur within the first five years of the marriage, so pre-marital counseling educates couples about communication and conflict resolution skills, strengths, and resources a couple can rely on, and sensitive issues such as sex and money. It is possible that pre-marital counseling can help lower the chances of divorce between couples.

**Dan A. Nita**

**Research Mentor: Irma Alonso, 2007**

***Global Warming: An Alarming Trend***

Half of the world's plant and animal species are at risk of extinction by 2100 as habitats are destroyed and ecosystems unravel. Between 100 and 200 cold-water-dependent animals, such as penguins and polar bears, are on the verge of extinction. The "greenhouse effect" responsible for warming temperatures is the result of human activity, the burning of fossil fuels, according to a latest report from the Intergovernmental Panel on Climate Change. Since the industrial revolution, temperature has gone up by an average of 1.11 F. Public opinion in the U.S. seems the least concerned. The overwhelming majority of Americans--68%--do not consider global warming an issue of significant importance. The consequences of ignoring global warming are dire and possibly destructive.

**Carlos Ojeda, Adel Elsayed, Jerzy Brodzikowski**

**Research Mentor: M.O. Thirunarayanan, 2006**

***The K-12 School Curriculum in the United States and in Countries of Origin: Results from a Focus Group***

A study is currently being conducted to determine students' experiences in K-12 schools in this country vs. those in other countries. As a part of this larger study, a focus group session was organized to discuss FIU students' school curriculum-related experiences in K-12 schools in the USA and in their countries of origin. Three Honors College students who had experiences in K-12 schools in the USA and in their countries of origin, participated in the focus group session that lasted about 90 minutes. Any concerns regarding the small size of the sample of participants should be alleviated by the facts that (a) the three students had considerable experiences in schools in the USA and in their countries of origin; (b) their willingness to share their experiences; and (c) the eloquent manner in which they shared their experiences during the focus group session. The entire focus group session, barring a small refreshment break, was videotaped with two cameras. The video transcripts are currently being analyzed and some interesting findings are emerging. These include, but are not limited to: (i) concerns about lack of passion among U.S. teachers for the subject matter that they are teaching; (ii) a belief among the students that the textbooks in this country are too big and contain a lot of unnecessary information; and (iii) an agreement by the focus group participants that school is much easier in the U.S. than in their countries of origin.

**Jessica Okaty**

**Research Mentor: John Kneski, 2008**

***Aesthetic Elements of Tuareg Leather Bags and Clothing: How Tuareg Artistry in North Africa Depicts Cultural Ideals and Beliefs***

This research project is based on a uniquely ornamented Tuareg leather handbag from Libya, Algeria. This is an item from the Frost art collection, which will be analyzed for ideas of aesthetics, values, and authority. Aesthetic elements of the bag, along with the history and cultural customs of people that created it, are the basis of this project. This item is viewed as a piece of art rather than a mere fashion accessory. Art provides one way of dissecting and understanding the ideals and beliefs of cultures that emerge in many ways. This handbag is an example of a functional and practical piece of art from the Tuareg people. The Tuareg have a strong opinion of artistry. They also focus on the role of physical appearance in Tuareg culture, as it relates to social status and traditions. These elements provide an interesting angle to gain a better understanding of the Tuareg cultural values and beliefs.

**Giovana Olivera**

**Research Mentor: Suman Kakar, 2008**

***Environmental and Genetic Factors That Cause Sporadic Cancer***

Despite the vast research available on factors that cause sporadic cancer, few college students are aware of the actual risks and about the fact that they can prevent most types of environmentally caused cancers. This paper will describe in detail the environmental and genetic factors that cause sporadic cancer. The environmental factors explored are ionizing radiation, chemical carcinogens, tumor viruses and diet. The genetic factors discussed are the following oncogenes: BRAC1, BRAC2 and LMTK2. The paper will also identify some of the social issues surrounding genetic testing and preventive measures taken to avoid environmental carcinogens. Data will be collected from college students at Florida International University describing their views on various environmental and genetic factors. This study will increase our understanding of the factors that cause sporadic cancer and specifically how this information is interpreted by college students.

**Mariana Oria**

**Research Mentor: Charmaine DeFrancesco, 2008**

***Survival on Campus: Why Undergraduate Students Are Not Completing Their Educations***

The national average of college non-graduates, otherwise known as dropouts, has been on the rise. There are various reasons, from social interactions to finances, why more and more students are entering institutes of higher learning but not remaining. The purpose of this research paper is to examine data to understand why undergraduate students are not completing their educations. By specifying what reasons students have for leaving their respective institutions, we can then take action to help those students so that they can graduate. The majority of students who become non-graduates do so because they lack the financial resources to continue. Others found themselves ill-prepared for their new life styles or have difficulty interacting with the others. Many Institutions are counteracting these dilemmas by providing counseling and orientations, and some institutes are even waiving tuition fees for students with low social economic status.

**Enrique H. Orizondo**

**Research Mentor: John Kneski, 2006**

***Effects of Ancient Greece and Rome on the Evolution of Totalitarianism and Dictatorships***

The Ancient Greek influence can be noticed in our everyday lives. When most people study early Greek culture, they say that Greeks are the originators of modern thought and democracy, considered to be the Greeks' main accomplishment. The purpose of my paper is to explain how these interpretations of the Ancient Greek practices contribute to certain systems, such as totalitarianism and dictatorships, that quite unlike democracy. The topics will be studied by analyzing what the ancient Greeks considered to be most important and by looking at their architecture and comparing it with buildings were products of either democracy or totalitarianism.

**Laura Ortega**

**Research Mentor: John Kneski, 2007**

***The Creation of a War Hero: From Mycenaean Greece to Fascist Italy***

Many things contribute to the creation of the hero, but of particular importance in the Mediterranean is the ruler. The ruler of a place and time creates the political climate that depends on warriors to protect an ideal: namely, the preparation for and justification of war. The study of rulers, and the goals they intend to achieve through war, leads to a new definition of what is commonly called "heroic / aggrandizing" warfare. Specific examples of heroic personalities from ancient Greece to



Fascist Italy exemplify what it is to be a flawed hero, including Achilles and Italo Balbo. A children's book from The Florida International University Wolfsonian museum collection, created during the time of Mussolini's Fascist Italy and depicting a young boy holding a rifle, effectively illustrates how the ruler has the power to propagandize warfare. It shows how a war can be fought under the premise that it is heroic and how prospective heroes, such as a rifle-toting child in Fascist Italy, subsequently strive towards a "heroic ideal," serving their country and leader.

**Daniela Ottati**

**Research Mentor: John Kneski, 2008**

***Bourdelle, Rodin and Heracles' Twelve Labors to Immortality***

The goddess Hera purposefully made Heracles lose his mind and, in this state, he killed his own wife and children. When he awakened from his temporary insanity, Heracles prayed to the god Apollo, and the god's oracle told him he would have to serve the king of Tiryns and Mycenae for twelve years in punishment for the murders. As part of his sentence, Heracles had to perform twelve Labors. These feats were so difficult that they seemed impossible to achieve. Was Heracles able to succeed and become Greece's greatest hero? This research, based on Emile Antoine Bourdelle's sculpture "Herakles the Archer," describes how Heracles' virtuous struggle and suffering led to his fame and immortality, and analyzes how Emile Antoine Bourdelle impressed Auguste Rodin, his mentor, and became one of the pioneers of 20th century monumental sculpture.

**Amy Pahmer**

**Research Mentor: Leonard Elbaum, 2008**

***Robotic Arm Mounted on a Wheelchair***

People who require wheelchairs for locomotion frequently have difficulty reaching objects placed in locations that would not be difficult to reach for able-bodied people. One potential solution to this problem could be an inexpensive, user-friendly, lightweight, wheelchair-mounted robotic arm. The purpose of my project was to design and create a prototype of this type of robotic arm. Features of the arm include five stepper motors to manage the five flexible joints of this arm (gripper, wrist, elbow, shoulder, and base), and a five-switch user-interface control system for each of the five joints. The arm has a lifting capacity of approximately 130 grams. It is able to reach objects within a horizontal distance of 36 centimeters and a vertical distance of 50 centimeters. I am continuing to work on evaluating the real-life usability of the robotic arm.

**Rozina Parbtani**

**Research Mentor: Suman Kakar, 2008**

***Medical Pluralism: Complementary and Alternative Medicine***

Alternative medicine is used to describe treatments apart from conventional medicine, such as acupuncture, herbs, or massage therapy. Alternative medicine is a major part of the medical practices in the East, but it has been largely rejected by Western medicine. Patients in Western countries are now becoming much more receptive to trying alternatives to conventional medicine, as more and more research is being done, and CAM is now being taught in many medical schools. Conventional medicine uses techniques that have been proven effective, whereas CAM focuses on beliefs that a medical care provider has to treat the patient's mind, body, and soul simultaneously. It consequently uses less invasive methods than surgery. Most CAM therapies are not scientific; they take on a more holistic approach for treatment. CAM is also used for improved well-being and to ensure a healthier lifestyle. This research examines the factors associated with the usage of complementary and alternative medicine. The demographic factors and previous exposure have a significant impact on the knowledge and willingness to use complementary and alternative medicine. The paper also focuses on the attitude of patients and doctors who support the usage of complementary and alternative medicine.

**Prashant Parekh**

**Research Mentor: Tonette Rocco, 2008**

***Hand Tremor Detection***

The objective of this project is to design, test, and assemble a hand tremor detector. The device is a means to implement some of the theory and circuit designs learned in the study of biomedical engineering toward the development of a medical instrument that can greatly impact one's quality of life. Outside of traditional science, and with respect to human resource development, debilitating diseases that produce tremors--like Parkinson's--are of prime concern. This project is intended to familiarize the reader with the operation/applications of transducers, diseases that cause tremors, second-order step-response analysis, conversion of parameters between mechanical and electrical systems, and circuit design procedure.

**Larissa Patten**

**Research Mentor: Peter Machonis, 2005**

***Form Follows Nature: Architecture of the Everglades***

Using photographic and written documentation, this project will serve as a unique view at the design and construction of everglades "architecture." Since architecture is an art that encompasses several components (building design, industrial design, and sculpture) and serves several functions (structure, technology, and beauty) this project will compare nature-made design versus human design in all forms of architecture. Research will consist of observation visits that are site-specific to various animal, insect, and plant-made shelters. Some examples to be investigated will include, but not be limited to, bird nests, rodent nests, crawfish burrows, spider webs, alligator holes, snake holes/habitats, strangling fig tree growth, and black mangrove bark design. By introducing these shelters/habitats as nature's designs, and comparing them to human designs, one can start to appreciate their similarities. The goal is to educate the audience on architecture in its most primitive forms, and how humans have taken concepts from nature to inspire modern design. An example of this comparison is the nature-made spider web. The web is designed to serve as a bait system and place for gathering food. Similarly, humans created a much larger version of this tool, the fishing net, to serve the same basic functions. Fisherman use nets to catch fish in large quantity and then store them for cooking and eating. Likewise, spiders lure their prey into the web and once the victim is secure, the spider can kill it and eat it. The difference between them is that a spider's web is biodegradable and has no negative long-term effects on the environment. Human-made fish nets, however, are generally made of synthetic materials that do not decompose and can be potentially dangerous for other animals

**Jairo Pava**

**Research Mentor: Peter Clarke, 2008**

***A Model-Driven Approach to Web Application Testing***

The growing number of web applications used in business today have come as a result of many advances in web-based technologies. As the demand for flexibility, mobility, and connectivity to the Internet pushes the development for more complex web applications, the testing frameworks used to test new software struggle to keep pace. Therefore, the rapid evolution of web-based technologies becomes a problem for businesses that require constant and thorough testing of their web applications. Using a model-driven approach, we can create a meta-model to support testing web-based technologies. By generating a meta-model for the constructs in web applications and a meta-model for the testing frameworks, we can simplify the transition between one form of technology and another in terms of testing. The meta-model can be used to create a generic testing framework for any new type of web application technology, thereby saving a business time, money, and complexity.

**Gabriela Perez**

**Research Mentor: MaryLou Pfeiffer, 2009**

***Helen Sternberg and Biomedical Ethics***

Medicine was once rooted in the belief that the mind and the body were one and needed to be treated as such. Advances in technology and discoveries in science have led many Western health care systems away from treating the mind and body together. My research will discuss the importance of the mind-body connection, and how this concept is beneficial in present and future health care systems. My research includes a study of the history of medicine and the biology of emotions and health. The project will discuss how our emotions affect our well-being through the interconnectedness of the immune, neurological, and endocrine systems. The major focus will highlight mind-body medicine and the benefits of implementing this form of treatment into patient care. I will discuss examples of complementary therapies and integrative medicine, such as visualization techniques, hypnosis therapy, and group programs that prove to positively impact health care providers and administrators, as well as patients, both economically and personally. Using health care statistics from the Center for Disease Control (CDC) and other sources, I will argue that the medical field should implement forms of stress reduction as a means of intervention. My research will show how emotional stress can cause an adverse physiological response and how certain methods of integrative medicine have been shown to be successful in comparison to routine medical practices. This will illustrate the importance of the mind body connection and show how it can be used to improve existing health care practices.

**Juanita E. Perez**

**Research Mentor: DeEtta Mills, 2008**

***The Impact of Agricultural Activities and Practices on Microbial Diversity and Soil Function***

Increased crop output and visually aesthetic lawns are just a few of the beneficial outcomes of agricultural management. However, the input of synthetic chemicals and physical manipulations create an impact on the microbial composition of

soils. Microbial communities are generally vulnerable to slight chemical changes in their environment. As a result, the population of a community may increase or decrease, depending on the intensity of the imposing factors. The overall effect leads to changes in microbial diversity. Thus, the goal of this project is to determine the level of impact of agricultural management by comparing the microbial diversity of fertilized soils to the microbial diversity of unfertilized soils. The soil samples will be inoculated with 1X PBS and placed in separate Biolog Ecoplates. The Ecoplates will be used to expose the microbes to different substrates at the physiological level. Reactivity to the substrates will indicate the extent of microbial metabolic activity. The samples will be extracted and a community profile will be produced by means of PCR and gel electrophoresis. A statistical program will be used to demonstrate the relationship between microbial communities and the substrates they are exposed to. Depending on the results of this research, further inquiry may lead to a future investigation on the effects of leaching and water table contamination by agricultural activities.

**Orlindes Perez**

**Research Mentor: John Kneski, 2008**

***Spanish Civil Wartime Art: How Catalan Artists Used Their Work as Propaganda during the Francoist Regime***

The project will focus on three different Spanish artists using their work as commentary for the violent civil war in their home country. They gained world acclaim in their lifetimes, and used their fame and popularity to spread messages both to their fellow citizens and to the world about the conditions in wartime Spain. Artists such as Joan Miro (who will be the focus of the project) and Pablo Picasso considered themselves to be Spanish Loyalists, and used their artwork as propaganda against the atrocities of war. Salvador Dali was for the Francoist Regime and used his work to promote change.

**Osman Perez**

**Research Mentor: Lidia Kos, 2008**

***Stem Cell Research: The Ethical Barrier***

This is a two-year investigative project touching the controversial topic of stem cell research. It surveys stem cells from an interdisciplinary perspective, by making use of biology, genetics, physics and humanities. This project goes beyond merely presenting the historical overview of stem cells. Indeed, it presents the basic concepts needed to understand stem cell research in general, and all the possible ethical stands by which this type of research can be critically evaluated. Additionally, this research makes use of an array of simple genetic concepts to explain the work of two prominent scientists whose parallel effort has recently changed the way stem cells are studied. This new approach promises to break the long-conceived ethical concerns regarding the use of human embryos.

**Osman Perez**

**Research Mentor: Irma Alonso, 2007**

***Stem Cell Research and Ethics***

The measuring of benefits and risks involved in every new invention ensures that our imagination does not overtake our rights and gives us freedom to change what we think is wrong. Stem cell research is one of those quests scientists constantly pursue, considering the immense benefits to our health. This project is an investigative research using the latest technological approaches to the ethical controversies on stem cell research. Various ethical standpoints regarding embryological development and the ethical status of fetuses are described. Besides the ethical considerations, the project presents a new experimental procedure developed by two prominent geneticists that could ultimately lead us to avoid the moral barriers stem cell research is subject to nowadays.

**Rocio Perez**

**Research Mentor: John Bailly, 2007**

***Art as Life : Aesthetics and Values Contemporary Art Exhibition***

From politics and war to cultural norms and traditions, art reflects and predicts contemporary realities. The "Aesthetics and Values" third-year FIU Honors seminar provides students with a challenging environment to engage their innovation and creativity through the research, organization, and curation of a contemporary art exhibition. Throughout the year, students discover the ways art has historically reinforced or challenged authority, assumed a role in social change, or documented history and defined social issues. Each group of three students works with a contemporary Miami artist to select pieces that reflect social and cultural manifestations. Additionally, each student is placed in a committee that coordinates one aspect of the exhibition--fundraising, negotiating gallery space, event promotion, and so on. This panel will discuss the process involved in not only organizing the event, but also in gaining a practical perspective on the social and cultural significance of art.

**Zaily Perez**

**Research Mentor: Irma Alonso, 2007**

***Ice Storm-Damaged Forest Ecosystems: Nitrogen Dynamics***

Hubbard Brook Experimental Forest (HBEF) is a 3,160 hectare land reserve located in the White Mountain National Forest, near North Woodstock, New Hampshire, that functions as an outdoor laboratory for ecological studies. It was initially intended as a major center of hydrological research in New England. The forest comprises nine individual watersheds, each of which drains into Hubbard Brook, and then through Mirror Lake, before emptying into the Pemigewasset River. HBEF was established in 1955 by the United States Forest Service for the study of forest and aquatic ecosystems. Years later, in 1988, HBEF was designated as a Long-Term Ecological Research (LTER) site by the National Science Foundation (NSF). The work at Hubbard Brook has led researchers to try to model or better understand complex forest ecosystem. Among the major research accomplishments we count small watershed technique for studying biogeochemistry, factors regulating nutrient flux and cycling in northern hardwood forests, and first documentation of acid rain in North America. Although many studies related to forest ecosystems have been sponsored by HBEF, this paper presents an unusual analysis in reference to the effects of natural disturbances on nitrogen (N) dynamics in this kind of ecosystem. HBEF provided the opportunity for this study due to its intensively monitored watersheds.

**Megan Petrosky**

**Research Mentor: Mary Lou Pfeiffer, 2009**

***The Positive and Negative Aspects of Eugenics in the United States***

Eugenics, even for negative purposes, has been widely used in United States. Substantial ethical issues go along with eugenics, both the form used in the past by the Third Reich and the more benign forms used today (planned pregnancies, gene therapy, amniocentesis, etc). On the one hand, eugenics can be used as a tool to “breed” the perfect human race and to eliminate certain gene pools, and on the other hand, eugenics is meant to help people make decisions about pregnancies and health. In some countries certain groups of mentally disabled people or just certain groups of people are sterilized, some unknowingly and against their will. The concept of using eugenics to regulate certain populations and “weed out” certain individuals from society is not a dead issue. This topic is so controversial because the negative use of eugenics overshadows the positive techniques and uses of eugenics today.

**Diego Pezua**

**Research Mentor: John Kneski, 2008**

***Liturgical Hymns in Catholic Mass Manuscripts from the 15th Century: How the Plague Epidemic Transformed Church Doctrine in Spain***

Through the analysis of historical trends and the geopolitical realities of Spain and the greater Mediterranean as a result of the plague and the Renaissance, I will examine how church doctrine was transformed. The particular manuscript under analysis, accredited to the 15th century and possibly authored by a Portuguese saint, will be the main focus, and the findings will try to extrapolate how this piece serves as a product of its time and place.

**David Pozniak**

**Research Mentor: Irma Alonso, 2007**

***The Global Economic Environment: Is Today's Youth Ready for It?***

It is important that the dominant nations ask themselves a very essential question: Do we educate our youth to respect, understand, and take advantage of this global environment so that people in Sydney, Seattle, Beijing, Warsaw, and Bangalore have equal chances to succeed? So far, it seems that American and European youth still live in a utopia in which Western countries will always remain the dominant economies. Even if this is true, it is still very important to teach them how to integrate with the three billion new capitalists who now belong to a global playing field. This project will present a series of steps that American and European universities should take so their students will be ready to respond to very strong competition in a new knowledge-based global economy.

**Carlos Prays, Rahul I. Patel**

**Research Mentor: Rajamani Narayanan, 2008**

***Calculation of the Mass of the  $\rho$  Particle, Taking the Mass of Its Quarks to Be Zero***

The meson particle  $\rho$  consists of two quarks: one up quark and one down anti-quark. By varying the masses of the individual quarks confined in the  $\rho$  particle, it is possible to determine the relationship between this meson and its constituents. In this research, we simply studied the characteristics of the  $\rho$  when the mass of its quarks were taken to be a value of zero. By

studying quantum chromodynamics, we were able to understand the motion of a particle like  $\rho$  through an instance in time and space. By applying this motion through a gauge potential of  $N$  colors, we were able to provide the  $\rho$  particle with several momentum values, thereby calculating the total energy produced, and eventually the rest mass of  $\rho$  with a set quark mass of zero. By proving that  $\rho$  has a mass even though we take its quarks to have none, we show that part of the mass of  $\rho$  comes from the interaction of the color fields alone, or in other words, the energy that binds the  $\rho$  particle creates a mass.

**Franchesca Ramirez**

**Research Mentor: Ophelia Weeks, 2008**

***Analysis of Lithium's Affects on AMPA Receptors and CaM Kinase mRNA Expression in Estrogen-deficient Mice***

Scientific literature has shown that glutamate receptors (e.g., AMPA) and proteins (e.g., CaM kinase) participate in memory formation in the hippocampus, a brain region involved in learning and memory. Preliminary results from our laboratory indicate that lithium and estrogen alter gene expression of several brain protein markers involved in apoptosis (programmed cell death), learning and memory. To augment these findings, we propose investigating lithium's effect on genetic expression of additional brain markers involved in learning and memory in estrogen-deficient mice. Additionally, these estrogen-deficient mice treated with lithium will be tested behaviorally using an object recognition task. Data collected from the genetic studies and recognition tasks will be interpreted statistically. We anticipate this study will contribute data to the literature that will be useful for developing therapies utilizing lithium as a treatment for cognitive decline due to estrogen deficiency.

**Andres Ramos**

**Research Mentor: Anthony Mc Goron, 2009**

***Imaging Techniques for Cytotoxic Compounds and Chemotherapeutic Drugs***

Both experiments deal with imaging techniques used for cytotoxic compound and chemotherapeutic drugs. The first involves improving a device that will better track lung movements during PET and CT scans. Scanning the lungs for a tumor can be troublesome due to lung motion. The image of the tumor is smeared and doesn't match well with a PET scan. By improving the technology behind the device, we hope to successfully scan the lung for tumors without the risk of blurred or smeared images. The second research project is developing a device that will improve the imaging of certain chemotherapeutic drugs. These drugs are coated with a radioactive marker that glows when exposed to near infrared light. By tracking the movement of the drug, we will be able to determine if the drug has been reaching its intended destination or affecting other systems. If these labeled drugs do reach their intended location, they may be able to destroy cancerous cells, as they release heat after being exposed to the near infrared light without affecting any adjacent tissue systems. This is potentially beneficial because if we find a way to ensure that the drug reaches only the cancerous region, the drug needs only to be exposed to near infrared light to be activated, thus reducing the risk of adverse effects.

**Annette Rasco**

**Research Mentor: John Bailly, 2007**

***Para Ti: A Film About Cubans***

Miami is no stranger to Cubans and the culture they have brought from just 90 miles away. Anyone who has lived in Miami will agree that Cuban culture is inescapable; we live with aspects of it every day. But do we really know the backgrounds and stories of the Cuban exiles around us? Many of our co-workers, family, friends, or even the man who bags our groceries have stories that should be told and recognized. This film is a short documentary describing one Cuban man's involvement in the counter-revolution against Fidel Castro. Through anecdotes of his personal encounters with Castro, along with testimonies from his wife and son (my father), we are able to get a glimpse of this determined man's efforts to free Cuba from a dictator.

**Amanda Renderer**

**Research Mentor: Irma Alonso, 2007**

***The Transition of Racial Profiling from African Americans to Those of Middle Eastern Descent***

Racial profiling is normally considered a problem faced mainly by African Americans and Hispanics. However, this is not the case anymore, as people of Middle Eastern descent are being profiled because society thinks that they are all potential terrorists. Profiling did not work in the past and it remains an ineffective method at protecting the United States from terrorist attacks.

**Ana Restrepo**

**Research Mentor: Charles Bigger, 2009**

***The Presence of a Toll-Like Receptor Gene in the Octocoral *Swiftia Exserta****

In the innate immune system of multicellular organisms many factors play a role in sensing the invasion of microorganisms. In recent years the importance of receptors such as Toll-like receptors (TLR) has been elucidated. The Toll receptor family members play an important role in mediating initial responses in a mammal's innate immune system by sensing the invasion of pathogenic microorganisms and initiating a range of host defense mechanisms. Because unique members (1-9) of the TLR family recognize different compounds from different pathogens they can provide specificity to the innate responses--e.g., inflammation--and the initiation of antigen specific adaptive immunity. Previous studies on Toll/TLR have shown that Toll-like receptors exist in mammals, insects, and plants. However, there have been no reports of Toll-like receptors in cnidarians. Dr. Bigger's laboratory at FIU studies immunity in *Swiftia exserta*, an octocoral species in the phylum Cnidaria. I will be looking for the presence of TLR genes in *Swiftia exserta* to try to link the evolutionary gap between the Protostomes (e.g., insects such as *Drosophila*, where Toll was discovered) and the Deuterostomes (e.g., mammals) by finding a TLR gene(s) in a member of the phylum that diverged prior to the Protostome/Deuterostome split.

**Lauren Rey**

**Research Mentor: John Kneski, 2008**

***The Circus: A Subject Explored Aesthetically by Post-Impressionist Artists***

Post-impressionist art experienced several movements, each unique in its approach and portrayal or study of a particular subject. These movements served to capture reality in a way that escaped the styles that had become so popular at the time, especially that of the Impressionists. These artists sought a method that would go beyond Impressionism to re-create their subjects and ideas based on new, individual studies of light, color and space. The styles they employed ranged from Pointillist dots of color to colorful poster art advertising brothels and dance halls. Expressionist caricature was also employed, especially during the World War period, to escape the harsh reality of the battles and gore. Each technique was used to try to find a way to transcend the Impressionist view of reality, with its comma-shaped smudges of color. A less well-known, but still interesting and powerful, artist of the period is David Schneuer. His art, similar to Toulouse-Lautrec's work, can be seen as poster art because of its original function, though it has elements of the German Expressionism that was flourishing during his time. These artists have one constant, which unites their work: all three chose the circus as their subject in their movement away from Impressionism.

**Michelle Richardson**

**Research Mentor: Ivelaw Griffith, 2006**

***Caribbean Survival and the Necessity for the Caribbean Single Market and Economy***

The Caribbean Single Market and Economy (CSME) was launched on January 30, 2006, to, among other things, facilitate the free flow of labor, goods, and capital among the participating countries of the Caribbean Community (CARICOM). It also will support intra-regional trade and allow Caribbean states to negotiate as a single body. Only six member states were ready to participate at the launch, with others pledging to join by the end of March 2006. The creation of CSME is an ambitious and highly complex undertaking by a region that has been politically and economically fragmented since colonial times. Trinidadian author C.L.R. James in *Birth of a Nation* said, "Nobody knows what the Caribbean population is capable of. Nobody has even attempted to find out." CSME will be a test of this statement. In an effort to test this proposition, this study will examine the genesis of the CSME, its structural and operational features, and examine its likely contribution to increasing the survival and bargaining capacity of the small states in the Caribbean.

**Anthony Rionda**

**Research Mentor: J.C. Espinosa, 2008**

***American Media and Its Influence on the Spanish American War***

This project explores the importance of propaganda in influencing the United States' entrance into the Spanish American War. Specifically, it deals with how media sources, especially yellow journalists, were able to show the events unfolding in Cuba and influence the public in America for war on Spain.

**Anthony Rionda**

**Research Mentor: Peter Machonis, 2008**

***Will Real Change Come to the Everglades?***

It has been nearly eight years since the historic agreement was signed between Florida and the federal government to restore the Everglades, yet there is little to show for it. This project examines historical trends in funding for Everglades National Park and other national parks. After analyzing maintenance, expansion and restoration issues for the Everglades and other national parks under the six previous United States presidents, I will evaluate President Obama's plans in this domain. In particular, how do his comments about the Everglades compare to promises by previous candidates for president? What was accomplished by previous administrations and what are our chances for true change? This project analyzes historical data as well as the promises made and actions taken by the newly inaugurated president and interprets what they signify for the future of the greater Everglades and the National Park Service.

**Sergio Rioseco**

**Research Mentors: John Bailly, David Chatfield, William Ritz, Bennett Schwartz, 2007**

***Untitled***

This painting is the latest in a body of work involving a visual comparison between the female figure and seemingly unrelated subjects. This specific study depicts the visual relationship between the lines and forms that make up a herd of wild zebras and the closely related organic shapes characteristic of the female physique. The piece attempts to illustrate that when conventional thoughts that come to mind upon seeing a herd of zebras are abandoned, all that is left is a series of shapes and lines that closely relate to those that compose the female body. The goal of the piece is to reveal the beauty that lies within alternative visual juxtapositions.

**Ailyn Rivero**

**Research Mentor: Stephen Winkle, 2009**

***RNA Polymerase Binding to Alternate DNA Sites***

The ultimate goal of this two-semester research project is to add to and build upon the knowledge already acquired through ongoing research in the laboratory supervised by Professor Stephen Winkle. Research in the lab focuses on the characteristics of RNA polymerase binding to DNA and the effects of such. Recent studies in the laboratory have shown that RNA polymerase targets binding sequences other than their reaction sites, which are known as promoter sites. In previous studies it was seen that RNA polymerase bent the DNA upon binding to promoter sites. Results also suggest that when RNA polymerase binds to alternative binding sites it causes a change in the DNA structure. Thus, research will focus mostly on investigating the nature of these changes in DNA structure. The effects of RNA polymerase binding to DNA structures will be examined using topoisomerase (which monitors the unwinding of the DNA) and mung bean nuclease (which monitors the opening of the DNA). In general, the proposed studies will provide further insight into the roles that RNA polymerase binding to alternate sites on the DNA play in the functions of the polymerase and how this affects the DNA strands. The ends of this proposed research is to observe and analyze the interactions between carcinogens and DNA in an effort to provide advances in antitumor drugs.

**Tiffany Robbins**

**Research Mentor: John Kneski, 2006**

***The Apotheosis of Literature: Mediterranean Philosophy in James Joyce's Ulysses***

The sophistication and intricacy of *Ulysses'* structure is born of James Joyce's laborious studies in the philosophical classicism of the Mediterranean. Focusing on Aristotle and his successors Thomas Aquinas and Saint Augustine, this paper correlates Joyce's aesthetic theory with that of pre-Socratic thought via Joyce's novels, philosophical treatises, and critical exegeses of both.

**Cristina Rodriguez**

**Research Mentor: Roberto Panepucci, 2007**

***Nanoscale Hole Fabrication in Cylindrical Devices for Bubble Generation***

The purpose of our project is to complete the nano fabrication stage of a unique catheter designed by a senior design group. The catheter, which will be attached to a chamber of pressurized oxygen outside of the body, is intended to deliver oxygen molecules throughout the body, especially the lungs, through the veins. For such a task to be feasible, a portion of the tip of the catheter must be punctured with nano holes with specific properties in order for nano oxygen bubbles to be produced. The tube must also have specific characteristics that will enable the bubbles to depart and flow into the blood easily.

**Jackie Rodriguez**

**Research Mentor: Richard Bone, 2007**

***Exploring Non-invasive in Vivo Methodology to Measure Macular Pigment Optical Density in Humans for Risk Assessment of Age-related Macular Degeneration***

Age-related macular degeneration (AMD) is the leading cause of blindness in the elderly. To date there is no cure, yet methods of prevention are being explored. Thus, this study strives to modify and develop a non-invasive in vivo method of measuring and analyzing macular pigment in the retina called retinal reflectometry. This method could yield reproducible data; quicker, more accurate risk assessment; and in this investigation, its accuracy is being compared to results from heterochromatic flicker photometry (HFP). Thus far, experimentation has revealed a loose association between well-lit retinal photographs, displaying minimum flash reflex (flash from camera observed as shiny patches on the retinal images) and more accurate data in comparison to HFP. Further investigation and larger, more diverse samplings of subjects are yet to be conducted to experimentally determine any correlations and refine the retinal reflectance method. A successful model of this method is important to AMD prevention.

**Karina Rodriguez, Yirama C. Medina**

**Research Mentor: James Riach, 2008**

***Reasons for Truancy in the Peruvian Amazon***

Communities in the rural Peruvian Amazon have high rates of illiteracy and truancy; the problem is most severe among indigenous communities. The degree to which students attend school has been shown to be associated with whether students believe their classes to be relevant or interesting. However, most studies on the education of indigenous Peruvian children focus on the influence of Western notions of education and on traditional forms of cultural transmission, instead of documenting perceptions that members of these rural communities have about their education. This research will document the perceptions that students, teachers, and parents in communities in the Orosa River Basin region of the northern Peruvian Amazon have about education in their communities. Methods used will include structured and relaxed interviews along with participant observation. Results of the study will be shared with the community leaders and teachers to help them improve their educational programs.

**Katrina Rodriguez**

**Research Mentor: John Bailly, 2007**

***Re-examining the Stanford-Binet Intelligence Test***

Professor Bailly's Third Year Honors students were asked to each create a box that embodies who we are as an individual. The box was to contain found objects that reflect us in a self-portrait of ready-made objects. The box I found myself in was used in the 1930's to administer one of the original forms of the Stanford-Binet Intelligence Test. The way in which the actual box is constructed symbolizes my personality. The box is closed by a wooden panel that easily slides off and allows others to see the inside. I view myself as quiet and reserved, yet around those closest to me these characteristics are hardly accurate descriptions of my character. The contents of the box include a few objects used in the test itself, as well as several items that describe my personality. This box challenges traditional methods of self-representation.

**Sarah Rodriguez**

**Research Mentor: James Sutton, 2008**

***The Opportunity of Night: Sleep and Its Absence in Shakespearean Drama***

The focus of this research project is to analyze the distinct role of sleep in the genres of comedy and tragedy, equipped with the fundamental understanding that Shakespearean tragedy displays nature gone awry, while comedy culminates in the celebration of harmony. In "A Midsummer Night's Dream" and Spenser's "Faerie Queene," sleep will be analyzed as a conduit for the unity of lovers. "King Lear" will be interpreted as a potential romance, with sleep healing the protagonist and his relationship with his youngest daughter. In "Hamlet" and "Macbeth," the interplay between sleep and death will be studied, investigating the reasons that pure sleep is so absent from the lives of the characters. Lastly, "King Lear," "Macbeth," and "Henry IV, Part II" will be used to reveal the role of sleep in the lives of monarchs and their responsibilities for their nations.

**Sarah Rodriguez**

**Research Mentor: John Kneski, 2007**

***Murdering or Admiring the Moonlight: Domenico Mastroianni and the Romantic and Futurist Styles***

Italian 1920s artist Domenico Mastroianni embraced Romanticism when creating his lauded paintings and photo-sculptures. His work *Chanson d'Amour*, in particular, displays a pastoral scene typical of the Romantic period. This paper will examine



the tenets and values of Romanticism in painting, as juxtaposed with those of the Futurist movement sweeping Italy in the 1920s. It will also investigate what may have led Mastroianni to look backwards towards a more traditional style instead of forward toward the avant garde.

**Sharayna Rolle**

**Research Mentor: John Kneski, 2006**

***Erotic Art in Ancient Pompeii: Explicit Art in the Modern View***

Mount Vesuvius: August 24, 79 A.D. Pompeii was immersed in art that could be found on public walls, on everyday items such as pottery, and on display in the form of sculpture. Some of the art forms unearthed were traditional, but Pompeii concealed a type of art that would shock historians, art considered pornographic, explicit and even sacrilegious. This paper will argue that the ancient Pompeian culture valued the artwork according to different view. The nude and extremely sexual art of ancient Pompeii was found throughout the ruined city, from the most public of places to the most private of settings. Held in high regard and importance, these images served a multitude of purposes, including religious items, images of fertility, tools of arousal and exhibitionism, and entertainment. This paper encourages an understanding and acknowledgement of the cultural difference of the people of ancient Pompeii from the largely Judeo-Christian views and ideologies that are part of our culture today.

**Teresa Ronquillo**

**Research Mentor: Peter Hargitai, 2008**

***The Changing World of Advertising: Alternative Media Marketing***

With the growing skepticism towards commercial speech and the invention of devices such as Tivo, which helps consumers avoid commercials, the world of advertising is currently undergoing assive change to be able to reach potential buyers in new ways. Alternative media marketing is any kind of commercial message that is not radio, television, billboards or print ads. I spent a summer in Berlin, Germany, at the Institut of Marketing Kommunikation, where I researched the international aspect of advertising with new media. I continued my research by analyzing different advertising campaigns, observing fluctuating marketing trends, and conducting interviews with advertising experts from around the globe. I am exploring a uniquely tailored topic from different points of view, by comparing findings from Germany and the US.

**Ariana Ruano**

**Research Mentor: John Bailly, 2007**

***A Film: Mission Medicine***

Working in a doctor's office for the past few years has given me insight into the critical issue of access to healthcare. Unfortunately, the medical offices in every shopping center and the 24-hour pharmacies on every street corner do not mean that Americans are a healthy people. The services exist yet remain inaccessible to many. There is a wealth of medical facilities that can provide professional help and a variety of medication to combat illness. But the question is: can you afford them? Using film, I attempted to portray the trouble that elderly and chronically ill individuals succumb to in a country where help is abundant but financially inaccessible.

**Marian Ruiz**

**Research Mentor: John Kneski, 2008**

***The Artist Jean Dubuffet: How Art Brut Flourished***

In this research paper in conjunction with the Frost Art Museum on the artist Jean Dubuffet, I will look at his life and how his style of art brut came to be, and how it influenced him, other artists and its time period. The specific piece I analyzed is called *Vernissage: Ecrits et lithographies, Galerie La Pochade*. The established aesthetics of cubism and surrealism were influencing the Twentieth-century world, but Dubuffet decided to follow the path less traveled; this is why he coined his views as art brut--because it was art that had not been portrayed in the normal view of people and he wanted to show it to the world. Therefore he is an example of what can happen when "normal" aesthetics are not followed. The experiences he underwent throughout his life and their influences on him helped give art brut its characteristics.

**German Moran Sadjadi**

**Research Mentor: M.O. Thirunarayanan, 2007**

***Transparent Shaping of Existing Software to Support Grid Enablement***

Networks in mobile computing will be analyzed. The general programming model called transparent shaping is a way to dynamically adapt the fast-growing rate of software used in networks. To implement this, four software development techniques are used: aspect-oriented programming, used to separate concerns in the development process; behavioral

reflection, used to reconfigure software; component-based design, used for independent development and operation of adaptive code; and adaptive middleware, to encapsulate the adaptive functionality. Using Java as the programming language at server side and JavaScript at the client side, the application will communicate by means of NanoHTTP technology to first upload a class file and update records on the XML file at the client side. Secondly, the user is allowed to modify certain fields at the client side, and after submission, changes take place at server side, using the same means of communication.

**Patricia Salani**

**Research Mentor: Peter Machonis, 2008**

***Reshaping Popular Views of the Everglades***

This project will investigate the implementation of an education program aimed toward youth to increase public awareness about the importance of maintaining and preserving natural resources. The objective is to positively modify the attitudes held by society, and young people in particular, toward nature in general. After performing a survey of high school students' and teachers' attitudes on the environment, I will specifically focus on their active involvement in volunteer projects and restoration efforts of the Everglades.

**Alexandra Sanchez**

**Research Mentor: Irma Alonso, 2007**

***Neoliberalism and Economic Policies of the Military Junta in Chile: 1973-1983***

The implementation of neoliberal economic policies in Chile was regarded as a success and was considered an example for other underdeveloped countries to follow. However, I argue that the imposition of the economic policies by the 1973-1983 military regime departed from neoliberal theory and resulted in high costs for society at the economic, social, and political levels. This project assesses what constitutes the neoliberal theory versus its application in Chile in order to determine the political causes of unfair economic practices that result in poverty, inequality, and political repression. In addition, the politico-economic coalitions that facilitated and legitimized the application of the neoliberal model are examined to establish which groups benefited from the implementation of the economic policies and which did not.

**Jessica Sanchez**

**Research Mentor: Mary Lou Pfeiffer, 2009**

***The Process of Healing and the Use of Traditional and Non-traditional Medicines***

The process of healing and the use of medicines have evolved dramatically through the ages and around the world. The pioneers of medicine, including the shamans of indigenous tribes and Eastern medicine men, based their medicinal ideals on the marriage between mind, body and soul to properly heal the ill. They were able to incorporate all facets of a human being into their medical practices. The growth of Western medicine, however, has taken an alternate course that is prevalent in the modern American healthcare system. Medicine is now an entrepreneurial business, seen clearly in such recent trends as (1) the privatization of insurance companies, (2) the rise in malpractice lawsuits, and (3) superficial treatment through medication distribution and less contact between physicians and patients. Traditionalists in medicine are now beginning to explore alternative and complementary medical treatments. This comprehensive study will provide research evidence to support the hypothesis that the mind/body connection in healing is crucial to the health of the patient and that more emphasis needs to be placed on this area in the American healthcare system. Such alternative practices include (1) complementary and alternative medicine (CAM), (2) holistic medical practices, (3) prayer and meditation in the healing process, (4) visualization techniques and hypnosis, and (5) acupuncture and Eastern practices.

**Olga Santiago**

**Research Mentor: Peter Machonis, 2007**

***Flowers under Your Nose: Hidden Treasures of the Everglades***

Flowers of the Everglades are often overlooked and under-appreciated, since many of them are quite small. This project offers a new perspective on the Everglades as much more than just a river of grass by focusing on the abundance, beauty, diversity, and significance of wild flowers in different Everglades habitats. A sampling of flowers in rock pinelands, hammocks and freshwater prairie demonstrates the high abundance and diversity of flowers that are missed by most Everglades visitors. The project teaches tourists and residents how to look for, observe, photograph and appreciate these flowers, and also provides background ecological information on flowers in the Everglades.

**Konstantinos Sebekos**

**Research Mentor: Nikolaos Tsoukias, 2009**

***Agmatine Acting as a Receptor Agonist Activates Endothelial NO Synthesis***

Arginine is important in growth and multiple physiological processes and is a precursor for the synthesis of nitric oxide (NO). Although cells maintain saturated levels of L-arginine, the cellular NO synthesis depends on externally administered L-arginine, in a phenomenon known as the arginine paradox. The possible involvement of receptors in the actions of arginine in NO synthesis is suggested due to the structural similarity of the arginine molecule's guanidium group and imidazoline's compounds, which are ligands for  $\alpha$ -2 adrenergic and/or imidazoline receptors, in addition to being a substrate for Nitric Oxide Synthase (NOS). Agmatine, decarboxylated arginine, may also act as a receptor ligand and stimulate NO synthesis in endothelial cells due to its structural similarity to imidazoline. This project aims to determine if L-arginine and its metabolite(s) stimulate NO production through a mechanism other than as an eNOS (endothelial constitutive nitric oxide synthase) substrate or if it depends on a second messenger pathway, such as calcium signal activation. The primary hypothesis is that exogenous L-arginine will stimulate eNOS NO production in endothelium cells by acting as a receptor agonist, independent of endothelial L-arginine substrate effects. The experiments will be performed using Human Umbilical Vein Endothelial Cells (HUVEC). NO production will be measured through the use of the NO analyzer. Elucidating the mechanism via which exogenous Arginine causes NO synthesis may help explain the variable clinical responses in attempts to administer L-arginine to stimulate NO synthesis and vasorelaxation in vivo.

**Crystal Sepulveda**

**Research Mentor: Gary Lund, 2008**

***Nervending: The Creative Process of a Dance Composition Work-in-Progress***

NeRvEnDiNg is an original contemporary dance composition conceived collaboratively by five dance majors and largely developed by a structured improvisation, an approach that both complemented my artistic vision and allowed the dancers to produce personalized phrases of movement under my direction during the creative process. The idea driving the choreography is anxiety, an emotional state that produces physiological changes or corporeal feelings such as fear, apprehension, worry, tense desire, and eagerness, to name a few. NeRvEnDiNg remains a work in progress, as I am still in the process of discovering the "arc" of the piece, without having to set a plot for the performer to relate. It must happen sensorially, from within the body. One of my challenges is to discover how I can continue to engage the performers within the creative process and to explore the best choreographic approaches to direct. A performance theory I am investigating is Ras Aesthetics--"the performance of the snout-to-belly-to-bowel"--that is, it requires the collaboration, literally, of all the senses to reap a response that breaks the barrier between performer and spectator. Ras Aesthetics can be practiced through a set of performance exercises and is based on the classical Indian theory of rasa, and contemporary theories of psychology and neuroscience.

**Crystal Sepulveda**

**Research Mentor: John Kneski, 2007**

***Public Spaces of Antiquity in Italy: The Relationship between Time and Space in the 'Monumental' Piazza***

Today, there are many exemplary models of public spaces that meet the criteria of a monumental utilitarian assembly in Italy. They are the piazze that have prospered, and have remained the centers of significant social, political, economic and artistic activity. In Italy, the piazza is an integral space to public life. There is great communal documentation within these public spaces. As such, an analysis on Piazza del Campo, a monumental piazza in the city of Siena, has been conducted in order to fully grasp the concept of the monumental piazza's relationship to time and space. Emphasis on the type of function (space), which is predictably accompanied by its historical significance (time), will be targeted to elucidate the utilitarian role of Piazza del Campo and how it is a space that creates a sense of place amongst the Sienese. Through space and time, the present seems to collectively dwell in the past.

**Antonina Shachar**

**Research Mentor: Mary Lou Pfeiffer, 2009**

***A Psychological Spectrum Comparing Capitalism and Communism***

As Ayn Rand's novels are regaining popularity due to organizations such as the Ayn Rand Institute, the Objectivist Center, and the Atlas Society, as well as Hollywood's 2009 film "Atlas Shrugged," debates regarding the proper form of government flourish. Sensitivity and intolerance often put a hold on such debates, leading to discouragement of discourse in the workplace as well as in educational settings. The "agreement to disagree" is difficult not to question. This project will consist of three main components: (1) analysis of major characters in Ayn Rand's novels, resulting in psychological profiles on the spectrum ranging from capitalist to communist; (2) analysis of major historical figures on the same spectrum; and (3)

a literature review of various published peer-reviewed findings in psychology involving the mental comparison of capitalists and communists. The results will consist of a comprehensive overview of mental and psychological attributes correlated with preferences for capitalism v. communism. The aim of this project is to create a “psychological profile” of the two extremes on the spectrum, capitalism and, opposing it, communism. The benefits of such a study include the in-depth understanding of what leads personal preference for one type of government over another, as well as the establishment of a research topic in sociology, anthropology, and public relations regarding the differences.

**Eddie Sierra, Nicole Valenzuela**

**Research Mentor: Ivelaw Griffith, 2005**

***Comparing the Positive and Negative Effects of the Tourism Industry on the Economy of Barbados***

What have been the positive and negative effects of the tourism industry on the economy of Barbados? The majority of, if not all, Caribbean countries have adopted the tourism industry as a means to further generate income. Each country is unique and has its own reasons for choosing to expand its tourism sector. Barbados is one of those countries that began working towards this expansion in the 1990s. Particularly for this reason it is valuable to investigate exactly how tourism has affected the economy of Barbados. This research will explain how the industry has contributed to the economic growth of Barbados and whether it has created economic conflicts. Furthermore, it will shed light on which groups or entities are benefiting economically and which are being negatively affected by the tourism industry.

**Camilo A. Silva**

**Research Mentor: S. Masoud Sadjadi, 2009**

***Bioinformatics: Improving the Efficiency in Genomic Analysis***

The main characteristic of genomic data is its large size. For example, GDB, which is a public repository of information on the human genome, is 8GB; Genbank, which is the NIH sequence database, has over 65 billion bases. The focus of this research will be on implementing solutions for problems related to the storage, search and retrieval of genomic sequence data using high-performance computer systems. One of the most striking features of DNA is the extent to which repeated substrings occur in the genome. In *C. elegans* (3.6 million bases) over 7,000 families of repetitive sequences have been identified. Families of reiterated sequences account for about one third of the human genome. Repeat sequences come in many different flavors and are responsible for different functions and diseases. Finding repeats has applications in finding defective genes and in forensic DNA fingerprinting.

**Harold Silva**

**Research Mentor: Peter Machonis, 2006**

***The Everglades: A Global Ownership Project***

The Everglades was about to become extinct until the federal government declared it a protected wildlife area with the support of activists. Since then it continues to be threatened by urban development in South Florida. With global attention to many social issues, such as the environment, all sectors – government, business, and community – have become accountable. Most of the one million plus people who visit Everglades National Park each year come from other states and even abroad. This research will identify the international global response to the Everglades by measuring the number of international visitors and linking this data to national and cultural factors that support ecological issues. The research concludes with an analysis of governmental and non-governmental key role players that affect the Everglades. The investigation will prove that there is a link between the number of foreign visitors to the Everglades National Park and nations that have a strong ecological consciousness.

**Meaghan Skog-Rios**

**Research Mentor: Christopher Rice, 2009**

***Raising Awareness of HIV/AIDS and Substance Abuse among Young Latinos***

HIV/AIDS and substance abuse rates are increasingly high among Latinos. However, many are still unaware of exactly how HIV is transmitted, what it does to the body, and how and when to get tested. In order to educate the sensitive population of Latino young adults, the “You Gotta Know” campaign has conducted research on the campus of Florida International University and is now going to recruit student organizations on campus to educate their peers. Through further research on HIV/AIDS awareness and substance abuse, we will work with each participant organization to determine a program of best fit for their group to reach out to their peers, educating them on healthy risk-free behaviors, issues surrounding substance abuse, and the dangers of both HIV/AIDS and substance abuse. Much of the project will be hands-on work with each Student Organization, providing them with tools and knowledge. Each group will determine the method they will use to reach out to fellow students.

**Annette Soberats**

**Research Mentor: Markus Thiel, 2008**

***French and British Foreign Policy Stances on Turkey's Accession to the European Union***

This paper will explore the foreign policy stances of France and the United Kingdom on Turkey's accession to the European Union (EU). Specifically, it will focus on the foreign policies of the center-right French governments of Jacques Chirac and Nicholas Sarkozy, and the British Labor governments of Tony Blair and Gordon Brown. The paper will argue that France and the United Kingdom have shaped their foreign policies on Turkey's EU membership based on their respective considerations of the future of the EU integration project and domestic public opinion.

**Roberto Sobradro**

**Research Mentor: Leonard Elbaum, 2006**

***Brain-Machine Interface and the Electroencephalogram***

The fear of a loved one dying of a common cold has been eradicated in modern society; however, a justifiable fear of losing the ability to walk still exists. Advances in brain-machine interfaces have the potential to revolutionize the management of physical disabilities, and may make the fear of losing the ability to walk a thing of the past. Brain-machine interfaces are based in large part on the collection, interpretation, and utilization of electroencephalograms (EEG). EEGs are the recordings of electronic signals emanating from the brain. In this paper, I will review the history of detection and processing of the EEG signal, describe and explain current techniques for detection and processing, technical problems in interpreting EEGs, and potential applications of EEGs in brain-machine interfaces, with a focus on restoring the ability to walk with EEG-controlled prosthetic devices.

**Michelle Solano**

**Research Mentor: John Kneski, 2007**

***A Tale of Two Times: Italian Social Healthcare in Fascist and Modern Italy***

The areas that a country's government influences are not limited to the economy or international affairs. An unusual, less obvious approach, of ascertaining the values that a country's leadership tries to impose is by assessing that country's healthcare system. Italy provides a fine example for this type of research and evaluation because it has a history rich in different types of governments and leadership authorities. Using various references, including two books from the Wolfsonian Library (*Social Welfare in Italy* and *Il Fascio Primogenito*) that contain pictures depicting the social welfare/health system in Italy, this research paper will compare the Italian healthcare system in fascist Italy with the current system.

**Sabrina Sosa**

**Research Mentor: Peter Machonis, 2005**

***Everglades Exposure and Awareness Strategies: An Analysis of Public Relations Strategies***

What are the different public outreach strategies being used to promote awareness of, and appreciation for, the Everglades? How do organizations differ in their forms of communication to the public? I will compare the public outreach goals and strategies used by the National Everglades Park, South Florida Water Management District, the National Audubon Society, Florida Fish & Wildlife Conservation, South Florida Ecosystem Restoration, the Environmental Protection Agency, and the Florida Division of Forestry. I plan to research how each of these organizations determine and reach their target audience, and identify strategies that do or don't work by examining the public feedback each gets. I will visit each organization to conduct interviews with each of their public relations officers and collect media kits, fliers, brochures, and all information necessary for my research.

**Jenna Stone**

**Research Mentor: John Kneski, 2007**

***Alfred Barr's "Diagram of Movements": Proving the Possibility of Classifying Painters***

Many critics argue whether or not artists can be classified. Many believe that it is nearly impossible to put a label on every style of painting. However, Alfred H. Barr, Jr., proved these skeptics wrong. Through Barr's diagram, "The Development of Abstract Art," one can see the historical influences of mainly French and Italian artistic movements, such as Neo-impressionism and synthetism in 1890 to non-geometric and geometric abstract art in 1935, the latter of which is accurately exemplified through Alberto Gagliardo's painting, *La Pieta Umana*.

**Mirena Suarez**

**Research Mentor: John Kneski, 2007**

***The Words Matter: How the Interpretation of the Poetry of Sappho Has Been Influenced by Sexist Bias***

Few voices on the history of ancient literature of western civilization have transcended their times to become the object of controversial studies. And fewer of these voices have been female writers. Among these selected figures is Sappho, the greatest lyric poet of ancient Greece, who has fascinated writers and readers for more than two and a half thousand years. Although only fragments of her passionate writings have survived, she has been an almost mythological figure whose life and poems have inspired admiration and fear, devotion and rejection at the same time. She led an aesthetic movement in poetry away from typical themes of the gods to the theme of the individual human experiences, freedom and emotions. On the other hand, her poetry has been considered to have homoerotic content by an erroneous and prejudiced kind of criticism. The basis for this theory has been reinterpreted through the analysis of Sappho's life and art, the transmission and loss of her work, the writings of great philosophers such as Plato and Socrates, and some well-established authors, and finally through the analogies and relation of Sappho's life and art with the painting, Woman's Suffrage.

**Edward Suh**

**Research Mentor: Mary Lou Pfeiffer, 2008**

***Authentic Tae Kwon Do: Bettering the Instruction of Tae Kwon Do***

With the ever-growing number of Tae Kwon Do practitioners, the need to standardize its teaching also grows. In order to do this, Tae Kwon Do must be defined into a set of principles and rules so that all its practitioners learn authentic Tae Kwon Do. The principles of Tae Kwon Do will be formulated in this project based on its ancient origin, but also taking into account aspects of modern Tae Kwon Do. Finally, through a blind experiment, I will examine the role that color/race plays in determining authenticity. In a real-world business environment, I will test if practitioners are more comfortable learning from a Korean or a non-Korean instructor.

**Donna-Maria Sylvester**

**Research Mentor: Cherly Carter, 2008**

***Sustainable Hotel Operation in South Florida***

Tourism is one of the major economic activities in Florida, as in many other cities in the United States. People are increasingly traveling. Travel industry statistics show that this activity is expected to develop rapidly over the next decade. It is imperative that management adopt a sustainable approach to operating business at all levels. The objective of the presentation will be to examine selected hotels in south Florida that are engaged in the permanent process of sustainable operation. I will look at the complete operation process, including the design of the hotel, the services provided, food supply, environmental programs, and community outreach. The data will be collected through interviews and existing literature. The data will be compared against national standards as well as national certification programs. A key question is, How progressively are hotels in south Florida addressing the issue of sustainable business?

**Anamary Tarifa, Alejandro Lopez**

**Research Mentor: Irma Alonso, 2008**

***Global Warming: How Can Industrial Companies Reduce Spillover Effects?***

We have learned over the past decade that global warming is not just a temporary issue. At this moment it is affecting the climate in many countries. Instances of these climate changes have caused sea levels to rise as a consequence of ice melting. One country being affected by this phenomenon is Greenland and other parts of the South and North Pole, where glaciers are melting. In addition, in equatorial zones, rain has been relocated as a result of these climate changes. The purpose of this research is to seek a solution to reduce spillover effects by industrial companies. As we will discuss, spillover effects not only jeopardize our daily lives, but also create hazards for the future.

**Marcela Tejedor**

**Research Mentors: Jack Parker and John Kneski, 2006**

***The Wolfsonian Annex Building: "City-as-System" as "Design for Sustainability"***

This study seeks to test the hypothesis that Southeast ecosystems, cultural values and built environment can be restored and integrated implementing sustainable approaches, such as sensible eco-logical design. The built environment constrains or enhances social and personal relationships and, as a social construction, both reflects and influences our attitudes towards nature and society. While the effect of design on people's attitudes, feelings and relationships cannot be isolated in a laboratory and measured, there is substantial evidence that design influences how we feel, emotionally and physically. Drawing on research in Southeast Florida natural ecosystems, built environment and Miami-Dade culture values, as well as

historical preservation, this project examines and analyzes how ecological design can play a part in restoring a sense of interconnectedness between nature and the social healing process. Studies in practices of green philosophy and sustainable design review and reveal if it is adequate to apply new principles to old practices of architecture and if the design process needs to be reconstructed upon new foundations. This review indicates that interdisciplinary studies and professional collaboration are critical. Furthermore, new eco-logical/sustainable design goals, criteria and practice can be derived from work in the field of environmental ethics and/or eco-philosophy. This research encourages rethinking and accepting responsibility for the consequences of design decisions on human well being, the viability of natural systems and their right to co-exist.

**Marcela Tejedor, Annellys Hernandez, Dalgis Mesa**

**Research Mentor: Irma Alonso, 2005**

***The Art of Connection: The Built Environment, Biological Conditions and Quantum Mechanics***

In the interdisciplinary environment that the Honors College provides, we are exposed to the interconnections among our different fields of study and roles in life. The synergy of our knowledge and experiences is the foundation that allows us to create our model of the art of connections. Ecological design, as we will show, is not only about the aesthetics of architecture, but also the integration of nature with human physical and non-physical worlds. Moreover, ecological design can be understood as an action concerned with the conditions necessary to initiate, support, and maintain human activities. Frank Lloyd Wright's Falling water, through its design, composition, and site, exemplifies this integration of environment and the perfect human dwelling, as well as the idea of sustainability. Sustainable construction is both an industrial and philosophical international movement. It can be defined as "creating a healthy built environment based on ecological sound principles." It is concerned with understanding the interactions of the built environment, the natural environment, and biological systems. In this context, "environment" is understood as those conditions, both physical and social, in which humans beings live, behave, and relate while design is understood as a process of problem solving, decision making, and implementation to bring about a desired change in some current state of affairs. Humans have the power to determine and construct their reality by changing the environment, within the limitations of physical and natural law, going "beyond the determinism of classical physics and the randomness of quantum mechanics." Therefore, free will is the ability that allows us to consciously bring nature and the universe into existence.

**Jesica Thavarajah**

**Research Mentor: John Bailly, 2007**

***A Film: A Starry Night's Dream***

A Starry Night's Dream is a video that features a white figure travelling throughout several Van Gogh paintings and interacting with different elements within them. It is meant to show the emotional response to Van Gogh paintings. The video was made using clip motion, meaning numerous pictures were taken and linked together. There are three versions of the video, each featuring different songs and meant to give a slightly different meaning.

**Rita Thomas**

**Research Mentor: Krish Jayachandran, 2006**

***Exploitation: A Step to Development***

Worker exploitation and human rights violations are common in the underdeveloped nations of the world, and there are many organizations working hard to stop these violations. However, the modern developed nations all have these same violations in their own pasts. This paper examines the relationship between these violations and development. I review the historical evidence of worker exploitation and human rights violations in developed nations and also the violations accruing in rapidly developing nations. This review indicates that violations of human rights and worker exploitation provide the necessary capital to bring nations into the next stage of development.

**Thomas Tijerina**

**Research Mentor: Irma Alonso, 2007**

***How Personality Traits Affect Test-taking***

The project follows an article review on a journal study of how personality traits affect a student's academic confidence. The students were given a test based on forty different questions pertaining to personality that would give the researchers an exact overview of what each student is like. In this project, I will conduct a similar, small-scale study on how students' personalities affect their actual grades on exams. The study will be conducted with a survey, such as an individual learning profile as used in the original work, and the data would be statistically analyzed. The analyzed data would then be compared with the actual outcomes of exams for these studied students.

**Angelina Troff, Nasser Brahim**

**Research Mentor: Irma de Alonso, 2006**

***Developing a Conceptual Plan for Implementing a Payment for Environmental Services***

The Earth's ecosystems provide life-sustaining services that capitalist societies have largely taken for granted until recently. Oftentimes, people who have the ability or responsibility to help preserve the ecosystem services lack economic incentive to do so. Promoting land uses that sustain ecosystems and creating mechanisms for compensating actors who carry out such sustainable land practices is part of a new regime of integrated environmental resource management. Current research suggests a conceptual framework for the implementation of a compensation mechanism, called the Payment for Environmental Services (PES) program. The conceptual plan will address certain policy relevant questions: What are the priorities of the program? What services will be provided? How will the amount of compensation be calculated? How will costs and benefits be distributed? Answering these questions is necessary in order to ensure that future PES programs are capable of reaching both economic development and conservation goals.

**Wai Tsang**

**Research Mentor: Peter Machonis, 2007**

***The Underlying Dilemmas of Tourism in Everglades National Park***

Every choice we make has an effect on people and the environment. The Everglades National Park is very young and there is very little literature on environmental issues that result from tourism. Granted, tourism does draw attention to the Everglades, and can lead to a love of the Everglades. When people love something, naturally, they will protect it. Certainly, it is good that tourism can create this affection, but what is the damage that may result from too much love? This project focuses on tourism-related problems that others have overlooked in hopes of inspiring others to conduct further research into this dilemma.

**Elys Viera**

**Research Mentor: John Bailly, 2007**

***A Film: Elys's Big Day***

Life is governed by cycles that predetermine our existence. We live the 365 days of each year, letting time pass by, without noticing that our lives have passed through time. We are born, we grow, and we age, and although our appearance changes, our inner spirit remains the same. This video captures how the lines dividing child, teenager, and adult often blur.

**Elys Viera**

**Research Mentor: John Bailly, 2007**

***Self-Portrait***

When I was younger I considered my life to be a dream, and sometimes I still do. For this project I used inanimate objects to create a narrative. This was not as difficult as I initially thought since I often associate objects with loved ones. In this self-portrait, the vivid colors and randomness of the drawing portray the length and complicated nature of my dreams. The right side of the box represents my expectations for the future; fantasies that I'm afraid will not come true. The books in the middle illustrate the path I'm following. The upside down tome, which came about accidentally, captures how I speak and think. The dried plant branches symbolize my family. My desire for adventure and interest in astronomy are depicted by the outgoing rope and the metallic black color of the box. This piece comprises the most important aspects of my life.

**Elys M. Vera, Aymara Fernandez, Marlen Quintana**

**Research Mentor: Suman Kakar, 2008**

***An Inconvenient Truth: No Reversal in the Onset of Type II Diabetes***

This research is concerned with investigating the impact of type II diabetes in the city of Miami, Florida. The development of diabetes is associated with genetic as well as environmental factors. For this study it will be assumed that genetic factors confer type I diabetes, whereas environmental factors contribute to the development of type II diabetes. The purpose of this study is to devise a method to reverse the inclining trend of diabetes in minority populations. It is hypothesized that if the environmental factors are monitored, the symptoms of diabetes may be reduced and the complications associated with it avoided. In this study the independent variable is exposure to knowledge of risks associated with diabetes. Intervening variables are age, ethnicity, education, socio-economic background, access to health care, and substance abuse. These variables will be studied in relation to their effect on the physiological and psychological symptoms associated with diabetes.



**Melissa Villar, Michael Riobueno, Hilda Fouladi, Samantha Banal**

**Research Mentor: Helen Cornely, 2007**

***Global Warming and Its Alleviation through Hybrid Buses in Miami-Dade County***

Global warming is a significant environmental problem. Automobiles are one of the most prevalent pollutants. In Miami, decrepit public transit leaves no chance for environmentally conscious travel. Buses are frequently late and constantly idle, emitting more CO<sub>2</sub> than necessary and causing global warming. Public transportation is very beneficial to those without cars, but Miami-Dade currently has only two hybrid buses in its Metrobus fleet, and the phase-in of new ones will last until 2012. With improvements in public transit, Miami residents will have reason to ride buses and ultimately protect the environment. Speedy implementation of more hybrid buses is integral. The presentation will further elaborate on this idea.

**Jacqueline Young**

**Research Mentor: Watson Lees, 2008**

***Photochromism and the Respective Photochromic Compound***

The goal of this project was to synthesize a photochromic compound that could function as an optical switch in biological systems. Photochromism is a reversible transformation of a compound induced in one or both directions by absorption of electromagnetic radiation between two forms, A and B, having different absorption spectra. The first step in synthesizing the photochromic compound involved the combination of several chemicals. The result was the desired product, diethyl isopropylidene succinate in 68% yield. The purity of the product was ascertained by NMR to be about 96%.

**Leng Leng Young**

**Research Mentor: Kevin O'Shea, 2009**

***Singlet Oxygenation of Dicyclopropylbutadienes: A Mechanistic Study***

Singlet oxygen is used in the synthesis of a variety of important biologically active compounds, so it is also implemented in a number of diseases and disorders. A fundamental understanding of its reactivity is critical for optimizing its utility in organic synthesis and minimizing detrimental effects in biological systems. Singlet oxygen products are often unstable. Their reaction mechanisms can be mimicked using 4-substituted-1,2,4-triazoline-3,5-dione (RTAD), such as 4-methyl-1,2,4-triazoline-3,5-dione (MTAD) and 4-phenyl-1,2,4-triazoline-3,5-dione (PTAD). The goal of this project is to probe the reaction mechanisms of RTAD using isomeric 1,4-dicyclopropyl-1,3-butadienes. The synthesis of the 1,4-dicyclopropyl-1,3-butadienes isomers, Z,Z, E,Z, and E,E will be attempted using standard organic synthesis methods. Z,Z-1,4-dicyclopropyl-1,3-butadiene will be synthesized from 1,4-dicyclopropyl-1,3-butadiyne, which will produce a yellow residue that may contain a mixture of useful isomers. Techniques for isolating and verifying these valuable isomers from the yellow residue will be investigated via iodine-assisted photoisomerization, silica gel column, thin layer chromatography, and proton NMR. Also, the synthesis of E,Z-1,4-dicyclopropyl-1,3-butadiene will be attempted by irradiating Z,Z-1,4-dicyclopropyl-1,3-butadiene with the presence of iodine. The amount of time of irradiation will vary; to increase efficiency and purity, the amount of E,Z isomer present has to be maximized and the amount of Z,Z isomer present has to be minimized. The purity of the product will be revealed using proton NMR.

**Michelle Zapiain**

**Research Mentors: Patricia Price and Damian Fernandez, 2006**

***Comparative Civic and Place Engagement in Three Latino Enclave Neighborhoods in Transition***

Funded by the National Science Foundation, this research entails a three-city comparison of inner-ring Latino enclave neighborhoods: Pilsen (in Chicago), Garfield (in Phoenix), and East Little Havana (in Miami). The study is meant to explore community interactions, civic engagement, and challenges faced by gentrification. Questions were asked that were as seemingly mundane as "Where do you shop for groceries?" and as complex as "What is the most serious issue or problem facing this neighborhood?" The goal was to find out not only where people from this neighborhood spend most of their time but also how involved they are in their community. The synthesis aspect of the project that undergraduates will be responsible for creating is a one-year commitment to either an independent study or an honors thesis in International Relations on the topic of civic and/or place engagement in a Latino enclave neighborhood. Besides taking surveys, the graduate and undergraduate research assistants will be assisting by conducting interviews and focus groups, and using various GIS techniques such as cognitive mapping to conduct the research. This research has broader implications besides the purely intellectual. It delves into some very serious questions facing America today involving the "Latinization" of the U.S.

**Michael Zolondek**

**Research Mentor: Irma Alonso, 2008**

***Misidentifying the Suffering Servant of Isaiah 53***

The identity of the "Suffering Servant" of Isaiah 53 has been an extremely important topic of debate in Religious Studies. One view is to identify the servant as the righteous remnant of Israel. This identification is made by one of the greatest rabbinic commentators of the medieval era, Rabbi Shlomo Yitzhaki, better known as Rashi. My thesis is that there is a major internal contradiction in Rashi's commentary on Isaiah 53 and that this contradiction demonstrates that he is incorrect in identifying the suffering servant as the righteous remnant of Israel. Once I demonstrate that his identification of the suffering servant is incorrect, I will then explain how this affects modern scholarly identification of the Suffering Servant, and show that those who view the Suffering Servant as Israel or the righteous remnant of Israel must rethink their understandings of this passage.

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