

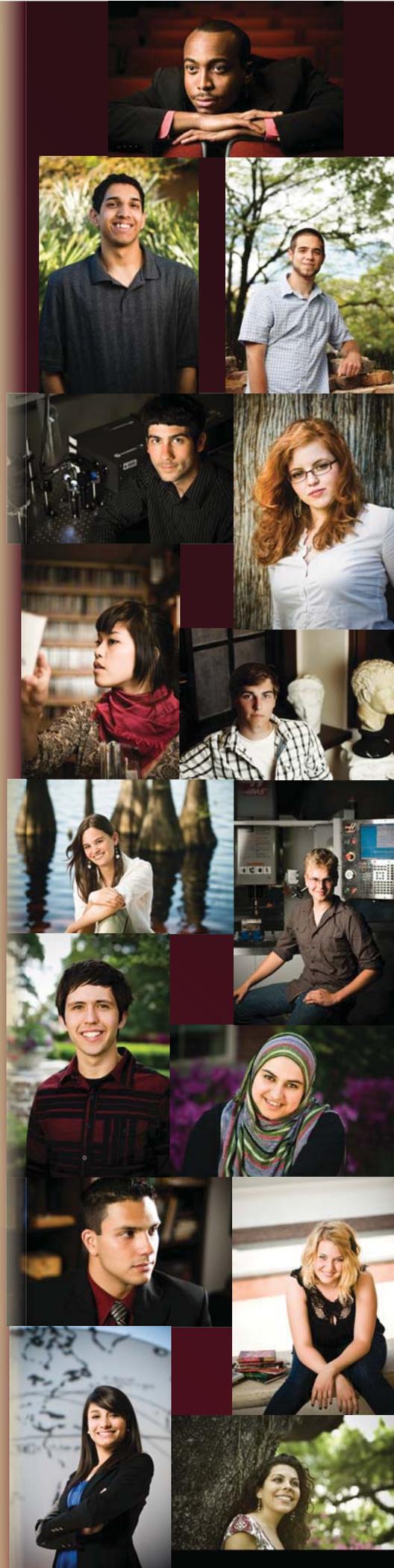
# Undergraduate Research and Creative Activity Award Symposium

September 30, 2010  
5:30 p.m. – 8:30 p.m.

Augustus B. Turnbull III Florida State Conference Center



*Division of*  
**UNDERGRADUATE**  
*Studies*



*The Office of National Fellowships extends great appreciation and gratitude to ONF benefactor and FSU Trustee David Ford.*

The Atlantic Coast Conference Fellowship provides two students each year, who are designated as our ACC Fellows, with the funding to conduct a year-long faculty-mentored research project.

The Undergraduate Research and Creative Activity Awards (URCAA) and The Mentored Research and Creative Endeavors Awards (MRCE) award students the funding to conduct a summer research project or creative activity under the direction of a faculty mentor.

*Special thanks to the FSU Student Government Association for their generous support of the symposium reception.*



**D. Craig Filar, Ph.D.**  
*Director, Office of  
 National Fellowships*

Welcome to the 2010 Undergraduate Research and Creative Activity Awards Symposium! Tonight we celebrate outstanding undergraduate research. The students who will present their projects have enhanced their undergraduate experience by taking on directed research and creative activity under the supervision and mentorship of some of Florida State University's most distinguished faculty.

Throughout the atrium you will find posters showcasing the research endeavors of student recipients of the Mentored Research and Creative Endeavors Award (MRCE). This evening's oral presentations are presented by students awarded the Undergraduate Research and Creative Activity Award (URCAA), as well as our two inaugural Atlantic Coast Conference Fellowship recipients.

Co-sponsored by the Office of National Fellowships and the Office of Undergraduate Research, this event serves as the culmination of the URCAA experience, but the work these students present tonight doesn't end here. Many of the awardees will continue their intellectual pursuits through honors theses, independent study projects, and graduate research and creative work. Similarly, the fruits of their labor will not be confined to the FSU community. The Florida State University-funded research and creative activity will likely continue to take the stage through academic conferences, scholarly journals, and art showcases, festivals and competitions.

Please also join us tonight in recognizing Florida State University Trustee, David Ford, for his lasting contributions to the university and to the Office of National Fellowships. Tonight we honor Mr. Ford by naming one of the URCAA awards for him to commemorate his generosity, vision, and support.

If you're attending this event as a student, we hope you'll be inspired to develop your own research or creative projects. We are pleased to provide you advanced access to the Summer 2011 URCAA/MRCE application tonight. You can also find this online at <http://onf.fsu.edu>.

We hope that the awards featured tonight have allowed their recipients a rich opportunity to investigate their academic interests while also serving as a vehicle for intellectual self-discovery.



**Alec N. Kercheval, Ph.D.**  
*Director, Undergraduate  
 Research*  
*Professor, Department of  
 Mathematics*



Jennifer Acker hails from Connecticut and is finishing up double majors in Theatre and Music (Vocal Performance Certificate). Most influential moments at FSU include: Singing for Chick Corea, Assistant Directing under Fred Chappell, Playing Desdemona in Shakespeare's Othello, and her semester in London. Love to all who continue to support and inspire.

Andrew Attar, a senior Chemistry major, is conducting research that aims to understand how light energy is collected and redistributed through the structure of semiconducting nanomaterials. He has been working with Dr. Ken Knappenberger and his research group for almost two years and was awarded one of Florida State University's first ACC Fellowships.



Avan Aziz is a junior double major in Psychology and Family and Child Sciences. She plans on attending graduate school in Clinical Psychology and following her dream of becoming a child psychologist working at improving the mental stability of underprivileged kids.

Stephanie Moliné Benoit is a rising senior double majoring in International Affairs and Economics. She was born and raised in the Dominican Republic and will be pursuing graduate studies in development economics. She aspires to dedicate her career to the discovery of alternative and innovative methods for poverty reduction.





Alexis Diao is a homegrown Tallahasseean. Last fall she interned at National Public Radio in Washington, DC, where she reluctantly experienced her first snowstorm; over the summer she circled the globe in less than 80 days. In December, she will graduate with concentrations in Communications and American Studies.

Jonathan Dupree is a rising junior from St. Augustine, Florida. He is double majoring in Classical Archaeology and Greek and Latin. When not in the field, he's playing ultimate frisbee with DUF, the FSU club team.



Duncan Haldane is a Mechanical Engineering major entering his senior year at Florida State University. His research is focused on the applications of smart materials in modern robotics. He plans to pursue a Ph.D. in mechanical engineering.

Al Heartley, who was awarded the ACC Fellowship, is a senior Theatre major. Al acts, directs, and researches the intersections of textual and performative analysis and the uses of research in the theatrical process with emphasis on African-American theatre and performance. Al plans a career in professional theatre and intends to pursue a Ph.D. in theatre and performance studies.





Christopher Matechik is an honors Biology student currently working on his honors thesis under the direction of Dr. Felicia Coleman and Dr. Christopher Stallings. He has worked in the Stallings lab since August 2009. After graduating, he hopes to pursue a graduate degree in ecology.

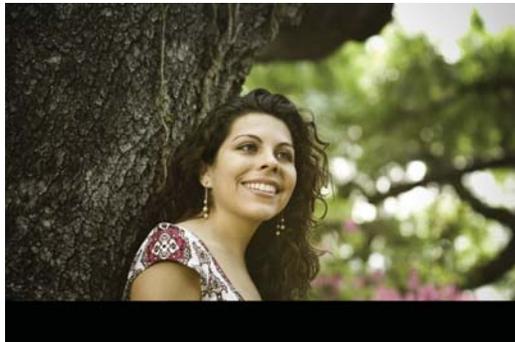
Megan Mayo is a senior majoring in Biological Sciences. Her interests include ornithology and animal behavior, and she has assisted in various research projects throughout her collegiate career. She plans to attend graduate school to further her education in biology.



Vivek Pal is currently a senior pure Mathematics major. He will pursue a Ph.D. in mathematics and aims to become a professor at a research institution. Vivek is also a 2010 recipient of the Barry M. Goldwater Scholarship.

Dayron Silverio was born in Havana, Cuba. A third year undergraduate at Florida State University, he is pursuing a BA in Criminology and Political Science. He is interested in international human rights and the socio-political transition states undergo after a period of egregious crimes against humanity.





Karina Subieta is a senior Chemical Engineering major with interests in bioengineering and alternative energy technologies. Upon graduation, she plans to continue her education in graduate school with the hopes that her work will help people and the environment. Karina is the inaugural recipient of the David B. Ford Undergraduate Research and Creative Activity Award.

With inspiration from his high school teacher, Matt Szmaida decided to trade into a major of Physics in 2008. Meeting success in the classroom and showing promise in his research endeavors, he plans to continue his study of nuclear physics at the graduate level in 2012.



Joni Wildman is a painter and a poet pursuing Bachelor's of Fine Arts and Bachelor's of Arts degrees. She recently had her manuscript workshopped at the Sewanee Writer's Conference with the help of an URCAA and an Honors Conference Travel Award.

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 ATRIUM

5:30 - 6:00 p.m. Reception  
 5:30 - 7:30 p.m. Poster Presentations

5:45 p.m. Welcome by  
*Dr. D. Craig Filar, Director, Office of National Fellowships*  
*Dustin Daniels, President, Student Government Association*

Recognitions by  
*Dr. Lawrence G. Abele, Provost and Executive Vice President for Academic Affairs*  
*Dr. Karen Laughlin, Dean, Undergraduate Studies*

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 6:10 p.m./Room 201

***Design of a Variable Stiffness Leg for Dynamic Running***  
 Duncan Haldane

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 6:10 p.m./Room 205

***Los Fantasmas de España:  
 A Cultural Memory of Repression***  
 Dayron Silverio

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 6:10 p.m./Room 214

***Navigating a New Approach to Shakespeare in Performance:  
 A Midsummer Night's Dream***  
 Jennifer Acker

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 6:35 p.m./Room 201

***Cross-Cultural Psychology: Marriage Conformity in Iraq***  
 Avan Aziz

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 6:35 p.m./Room 205

***Analyzing Photoproduction Data the CB-ELSA Experiment to  
 Establish Missing Hadronic Resonance States***  
 Matthew Szmaida

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 6:35 p.m./Room 214

***Sugar Analysis During Enzymatic Hydrolysis of Biomass***  
 Karina Subieta

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 7:00 p.m./Room 201

***Navigating the Swarm: An Oral History of Filipino World War II  
 Veterans after the 1946 Rescission Act and Their Movement  
 Toward Equity***  
 Alexis Diao

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7:00 p.m./Room 205

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***Vocal Cues of Pair Stability in Cooperative Lance-Tailed Manakin Males***

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***The Brothers Size: An Exploration of Yoruba Tradition and Homosexual Culture in the African-American Community***

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***The Cost of Safety: Negotiating the Trade-off Between Refuge and Growth in Pinfish***

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Christopher Matechik

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7:25 p.m./Room 205

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***The Period of the Twist of an Elliptic Curve***

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Vivek Pal

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7:25 p.m./Room 214

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***Microfinance as a Strategy for Poverty Reduction***

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Stephanie Moline Benoit

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7:50 p.m./Room 201

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***A Study of Calcium Carbonate Accretions at Kalamianos, Greece***

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Jonathan Dupree

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7:50 p.m./Room 205

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***Not Oz***

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Joni Wildman

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7:50 p.m./Room 214

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***Photoinduced Dynamics of CdTe Nanoparticles Studied by Time-Resolved Spectroscopy***

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Andrew Attar

## UNDERGRADUATE RESEARCH AND CREATIVE AWARDS

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### *Navigating a New Approach to Shakespeare in Performance: A Midsummer Night's Dream*

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**Jennifer Acker**

Supervising Professor: Dr. Kris Salata

Jennifer directed and produced a full-scale production of one of the Bard's most beloved plays, *A Midsummer Night's Dream*. She had two goals: 1) to overcome the stiff, antiquated conventions often associated with Shakespeare, so that she and her ensemble could uncover the passionate, bawdy and utterly-human tenacity that lies within the written pages, and 2) to share an attainable, affordable production for all. Jennifer's project began with research into the text, as well as study of applications for both Elizabethan and modern theatre practices. With mentor Kris Salata, she studied modern methods from Grotowski's divisive theatre. She also traveled to the Atlanta Shakespeare Tavern to study traditional Elizabethan theatre practices. For the production phase of her project, Jennifer assembled a talented and dedicated cast of twenty and a crew of equal size who worked for weeks to bring to life the language and world of the play. This artistic collaboration culminated in three, free-to-the-public performances of *A Midsummer Night's Dream* at FSU's Lab Theatre, July 15-17, 2010. In true Shakespearean fashion, the audience was as important to the integrity of the show as were the actors. Under Jennifer's direction, the ensemble staged a production of *A Midsummer Night's Dream* that was as accessible for the modern audience as if they had lived four-hundred years ago. Thus was born Jennifer's fledgling production company, *Were the World Mine Productions*, a namesake from one of her favorite lines from the play and homage to her first full-scale foray into the world of directing.

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### *Cross-Cultural Psychology: Marriage Conformity in Iraq*

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**Avan Aziz**

Supervising Professor: Dr. Peter Garretson

Psychology teaches that both genetic and environmental factors contribute to personality development. Personality can manipulate motivation. Motivation is believed to be the cause of almost every action in psychology. Conformity is an accepted belief in psychology that illustrates how an individual's attitudes, beliefs, and behaviors can influence or be influenced by others. It is usually practiced because of the fear of social rejection and enormously affects evolutionary and social psychology. In today's society, conformity in relationships can be seen in large numbers.

My research focuses on the motivation of marriage in the Republic of Iraq. Iraq is a primarily Islamic country - about 97% of the population is Muslim. However, Iraq is divided in its religion, as 60% of Iraqis are estimated to be Shia Muslims while about 40% are Sunni Muslims. Another controversial split in Iraq is in regards to its ethnic divide. Northern Iraq has been home to the Kurds for thousands of years and currently Kurds make up about 20% of its population although Iraq is a predominantly Arab country. This project investigates the different motives of marriage within the diverse religious sects and ethnicities and how those motives affect marital satisfaction, with respect to social conformity and its role as one of the main reasons people get married.

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### *Microfinance as a Strategy for Poverty Reduction*

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**Stephanie Moliné Benoit**

Supervising Professor: Dr. James Cobbe

Microfinance seeks to provide basic financial services to low-income individuals who are normally excluded from the formal banking sector. Microfinance institutions are very diverse, but they all share this commitment and provide services that include loans, savings, money transfer services and insurance. The purpose of my research was to explore the extent to which microfinance in the Dominican Republic could lead to sustainable increases of income and a reduction in poverty. There has been a growing focus on the potential

of microfinance in the development field; therefore, I sought to investigate whether the provision of financial services to poor individuals who do not have normally acceptable creditworthiness would improve their living conditions. Theoretically microfinance appears to give control of economic resources, better bargaining power and empowerment to its clients, but does it have tangible effects on individuals' incomes? I conducted field research in collaboration with the microfinance institution Banco de Ahorro y Credito, Adopem. I interviewed a sample of clients of Banco Adopem who had been borrowers for at least a year and compared them to a group of non-borrowers who were matched with the borrowers in certain characteristics. I propose that having access to financial services can have a positive impact on individuals' living conditions, but that a direct impact on their income is conditional upon certain borrower traits and behavior.

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### ***Navigating the Swarm: An Oral History of Filipino World War II Veterans after the 1946 Rescission Act and Their Movement Toward Equity***

**Alexis Diao**

Supervising Professor: **Dr. Neil Jumonville**

The 1946 Rescission Act did just as it implies – rescinded America's promise to provide veteran benefits and veteran status to Filipino soldiers in exchange for their military service during the Second World War. The Act passed despite the Philippine's former status as a United States commonwealth and colony. The Philippines served as a strategic locale in the south Pacific, and was the site of the Bataan Death March, where the Japanese Imperial Army imprisoned thousands of American and Filipino soldiers, an event later considered to be a Japanese war crime. Since the 1946 Rescission Act, decades of lobbying and legislation in the US have been geared toward gaining equitable services for Filipino veterans, including burial expenses, health care, disability pensions, and naturalization.

*Navigating the Swarm* focuses primarily on the Filipino Veterans Equity Act of 2008, which was passed as part of President Barack Obama's American Recovery and Reinvestment Act of 2009. The Equity Act gives remaining Filipino veterans a one-time lump sum payment of either \$9,000 or \$15,000; acceptance of the payment disallows any further claim to monetary compensation. *Navigating the Swarm* is an oral history of veterans residing both in the US and in the Philippines of their involvement in the war, experience with the lump sum payment, and feelings about whether equity has been achieved.

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### ***A Study of Calcium Carbonate Accretions at Kalamianos, Greece***

**Jonathan Dupree**

Supervising Professor: **Dr. Daniel Pullen**

My research this summer looked into the merit and functionality of using Calcium Carbonate accretions found on pottery sherds as a contributing factor to the archaeological process, something that has received very little prior application by archaeologists. The site in question is primarily a Mycenaean Harbor site (C.A. 1400-1250 BCE), and like many others in the Korinthia, it was constructed using limestone blocks quarried from the abundance of limestone bedrock surrounding it. Over thousands of years, as rain water poured over the limestone, dissolved Calcium Carbonate was washed onto stationary pieces of pottery and stone creating noticeable accretions. The methodology of my research involved looking at each individual piece of pottery, and assigning each a value based on the surface area of the piece covered by Calcium Carbonate and if nodules of Calcium Carbonate had formed on the surfaces or breaks. Then the information was transferred into the Geographical Information System (GIS) to create a model of the site where differing densities of Calcium Carbonate would be more visible. Now, individual buildings can be examined more closely based on outlying high or low concentrations of Carbonate on the sherds taken from them. Although continued research is needed, the hope is that this data can be the foundation in determining whether the study of Calcium Carbonate can be a collaborating source of relative dating, and whether any other unknown application is possible.

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## ***Design of a Variable Stiffness Leg for Dynamic Running Using Applied Smart Materials***

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**Duncan Haldane**

Supervising Professor: Dr. Jonathan Clark

Recent developments in robotic locomotion have focused on establishing the passive compliance of the running leg such that the dynamics of the system are tuned for optimal performance. This approach limits the adaptability of the robot by optimizing performance only for a specific range of conditions. Simulations show that manipulating the stiffness of the running leg is the most effective way to adapt to various operating conditions. The goal of this project is to develop a robust variable stiffness leg for the Edubot platform, a hexapedal robot. These legs maintain the same morphology as the standard legs for the platform to allow for direct comparison of dynamic performance. This summer I determined the optimal composite layup, six layers of 12K IM-7 Carbon Fiber layered in alternating directions, which would give the desired leg stiffness, and allow for adjustment of that stiffness. By incorporating a class of smart materials called shape memory polymers, the stiffness of the leg can be changed by simply heating it. I formulated a custom shape memory polymer resin to create part of the composite leg. The resultant leg maintains mechanical strength and is capable of a significant change in stiffness.

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## ***The Cost of Safety: Negotiating the Trade-off Between Refuge and Growth in Pinfish***

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**Christopher Matechik**

Supervising Professor: Dr. Christopher Stallings

In the presence of the predatory Gulf flounder (*Paralichthys albigutta*), pinfish (*Lagodon rhomboides*) move from low- to high-density seagrass patches, where they attain refuge from predators. However, foraging ability of pinfish appears to decrease with increased seagrass density, as suggested by reduced growth rates. My research attempts to quantify the trade-off between refuge and growth by restricting pinfish to specific densities of seagrass and exposing pinfish to varying levels of predation.

This ongoing project requires the use of 15 cages deployed in the Gulf of Mexico. Designing cages that are capable of retaining both the burrowing Gulf flounder and pinfish, large enough to reflect ecological reality, and strong enough to withstand the rigors of the marine environment, has proven to be a challenging endeavor. However, I have developed a design that meets the above criteria and should be useful for current and future studies.

To date, my research has led to successful surveying of seagrass patches, deployment and testing of various cage designs, and completion of a companion study on the effects of tagging on growth and survival of pinfish.

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## ***Vocal Cues of Pair Stability in Cooperative Lance-Tailed Manakin Males***

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**Megan Mayo**

Supervising Professor: Dr. Emily DuVal

Dominance hierarchies exist within many different groups of animals across many different phyla and are essential to the wellbeing and maintenance of cooperative partnerships or family groups. We hypothesized that Lance-tailed Manakins (*Chiroxiphia lanceolata*) communicate dominance within cooperatively duetting and displaying alpha and beta male pairs through auditory cues contained within duets, specifically asymmetrical sharing of the initiation of elements within a duet. Duets contain two types of elements. The first element is characterized by both males overlapping each other with the same vocalization, while the second contains two overlapping vocalizations that are drastically different. We characterized variation in initiation of these different song elements and related this variation to interactions with males and females. Based on field research we conducted on Isla Boca Brava, Panama, our results showed that initiation patterns of the two different song

elements strongly correlated with each other, and that males were consistent in patterns of duet element initiation within and between singing bouts. We also found that initiation patterns did not relate to the strength of the partnership between an alpha and his beta. However, initiation ratios did seem to have a correlation with interactions of the respective ages of alphas and betas, specifically that very old alphas initiated more when paired with very young betas, and older betas initiated more when with very young alphas. Reproductive success also seemed slightly correlated with initiation ratios of the second type of duet element.

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### ***The Period of the Twist of an Elliptic Curve***

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**Vivek Pal**

Supervising Professor: **Dr. Amod Agashe**

Elliptic curves are mathematically interesting objects to study and have also become important in modern day cryptography. First a few facts: Elliptic curves can be defined by the polynomial relation “ $y^2 = x^3 + ax + b$ ”, in what is called Simplified Weierstrass Form. An important transformation of an elliptic curve is the twist of the curve. The twist of an elliptic curve is another elliptic curve which is different on a small scale (i.e. over the rational numbers) and is the same on a large scale (i.e. the complex numbers or an extension of the rational numbers). One particularly useful invariant for an elliptic curve is the period of an elliptic curve. The goal of this project is to show a relationship between the period of an elliptic curve and the period of the twist of the elliptic curve. There has been some evidence that this relationship should exist. For example, my advisor, Prof. Agashe, showed a relation between the periods for some classes of elliptic curves. My goal is to extend his proof to work for all elliptic curves.

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### ***Los Fantasmas de España: A Cultural Memory of Repression***

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**Dayron Silverio**

Supervising Professor: **Mr. Daniel Maier-Katkin**

The literature on transitional justice debates the relative effectiveness of war crimes tribunals (punishing the guilty) as compared to truth and reconciliation commissions (preserving a public record of past events) as strategies for moving a society with a history of human rights abuses ahead, but it is always assumed that some formal process is necessary. Generalissimo Franco’s death in 1975 marks the end of a period of abuses that began almost 40 years earlier during the Spanish Civil War (1936-1939), and Spain, despite a transition long considered an epitome of success, never had any formal process. Recent publications have referred to societal tensions caused by Spain’s history of human rights abuses aggravated by government sponsored “social amnesia” (the “pacto del olvido”) that question the success of Spain’s transition to democracy. To examine the validity of these claims and assess the success of the transition, I employed a qualitative analysis composed of archival research and interviews in Spain with prominent legal experts, historical scholars and other individuals from diverse professional and social backgrounds. Preliminary analysis of the data suggests that while recent government actions have stirred tensions surrounding the sensitive subject of the Spanish Civil War, the shortcomings cited by critics of Spain’s informal transition are mostly a result of the unique complexity of the nation’s past, which involved crimes committed by both opposing factions and are rooted within the ideological schisms of a highly regionalized country. Additionally, the interviews suggest that disparity exists between internal and external perspectives on the transition’s success.

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### ***Sugar Analysis During Enzymatic Hydrolysis of Biomass***

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**Karina Subieta, The David B. Ford Undergraduate Research and Creative Activity Award**

Supervising Professor: **Dr. Subramanian Ramakrishnan**

Conversion of biomass to biofuels and value added chemicals is an appealing route to reduce our dependence on petroleum-based fuels and products. A typical biomass conversion to biofuels is composed of the following steps: (1) pretreatment of the biomass by dissolving it in a solvent (2) hydrolysis of the biomass to simple sugars using enzyme activity and (3) conversion of the sugars to biofuels and chemicals by microbes. In many

cases, the pretreatment solvent inactivates the enzymes, so all traces of the solvent must be removed before adding the enzymes to the biomass, which raises the cost of biomass conversion.

In this research, an in situ enzymatic hydrolysis process was tested in which the biomass was dissolved in a pretreatment solvent and enzymes are added directly to the reaction mixture. Therefore, the utilization of an effective pretreatment solvent in which the enzymes remain active is key. Pretreatment solvents tested were N-methyl morpholine N-oxide (NMMO) and two ionic liquids: 1-ethyl-3-methylimidazolium acetate and 1-ethyl-3-methylimidazolium diethyl phosphate. Research has shown that they are excellent solvents of cellulose and safer alternatives to traditional pretreatment solvents. The yield of the sugars produced during enzymatic hydrolysis is critical as it highly influences how the microbes will uptake the sugars to produce biofuels.

The goals of this research were to study which sugars are formed during enzymatic hydrolysis of biomass and how sugar yields are affected by pretreatment solvent and experimental conditions such as solution pH and enzyme loading.

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## **Analyzing Photoproduction Data the CB-ELSA Experiment to Establish Missing Hadronic Resonance States**

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**Matthew Szmada**

Supervising Professor: Dr. Volker Crede

The discoveries of the inner workings of the atom in the early parts of last century have revolutionized the way we think about and make use of the smallest pieces of our world. However, as further experiment has shown, we have yet to fully grasp the beautiful complexity found at scales much smaller than that of the atom. In order to resolve the structure of protons and neutrons, in this research we have analyzed data from an experiment conducted at the University of Bonn, Germany in which high-energy light was concentrated onto a liquid hydrogen target resulting in excited states of the protons.

There are many ways that the protons may become excited. Several of these energetic states have already been established experimentally, but current models of these particles predict more than have already been seen. Part of the difficulty arises from the fact that excited proton states are broad and overlapping, making it hard to disentangle the contributions from each individual state. The purpose of this research is to study a particular decay of these excited states, allowing us to isolate these individual contributions to the excited proton spectrum, clarifying the importance of each one. Through the analysis of these data, we move closer toward understanding the incredibly tiny and paving the way for new technology.

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## **Not Oz**

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**Joni Wildman**

Supervising Professor: Barbara Hamby

My book explores the world of childhood memories. I use fairytales to illustrate the dynamic and ongoing relationship I have with the characters in children's stories as an adult. The poems often contain strong female voices in reflection of my own female voice, and I mix fairytale characters and plots with cartoons and pop-culture references. My humor often dilutes the ominous tones that mark the original stories. The result is a snapshot of the new world that fairytales form when they are remembered in the adult mind; a picture of the stories in childhood memories as distinct as actual events in my past, people I have known, and places I have been. I change the fairytales to reflect what I remember as a child, or what I know as an adult. Because the only hunter I have ever known is Elmer Fudd from the Looney Tunes cartoons, when I pictured a hunter for a Little Red Riding Hood Poem, he was my hunter. The poems have the fresh, playful attitude of children's stories, with a dark chaos that reflects questions of identity and a sense of humor. The book contains over 60 pages, comprising works inspired by a range of popular stories: Cinderella, Xena Warrior Princess, and Anna Anderson, the imposter who claimed to be the lost Grand Dutchess Anastasia. Parts of the manuscript have been workshopped at the Sewanee Writer's Conference by Alan Shapiro and Mark Strand and will be sent out to publishers this fall.

## ATLANTIC COAST CONFERENCE FELLOWSHIPS

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### *The Brothers Size: An Exploration of Yoruba Tradition and Homosexual Culture in the African-American Community*

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**Al Heartly**

Supervising Professor: Dr. Irma Mayorga

Many famous African-Americans have written about the various experiences of Black culture. Most theater scholars recognize playwrights such as August Wilson, Ntozake Shange, James Baldwin, and Suzan Lori-Parks. These playwrights have addressed issues that explore masculinity solely in terms of heterosexuality. However, there is a new playwright who is challenging the hegemonic concept of the heterosexual African-American male.

This research examines the structural and aesthetic elements of up-and-coming African-American playwright, Tarell Alvin McCraney, and his trilogy of plays entitled *The Brother/Sister Plays*. My research examines the second play, *The Brothers Size*, which tells the story of two brothers, Ogun and Oshooshi, who live in the Louisiana Bayou. McCraney's style is unique within the American theater and African-American theater. McCraney, as a young gay African-American, explores the taboo subject of African-American male homosexuality. McCraney speaks out and writes about experiences of Black homosexuality, using diversified and tasteful language not seen in many plays in the African-American theatrical tradition. This project will focus part of its research on exploring the history of black masculinity and homosexuality and how Tarell McCraney, with his plays set in the ghetto of Louisiana Bayou culture, chooses to explore the idea of changing black masculinity. The research will also focus on the forms of his theatrical aesthetics and how they inform the polyvocal storytelling of the play itself. This research encourages scholars in theater to commence looking at McCraney's work as well as demonstrate the implications of research on the theatrical process and performance practice.

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### *Photoinduced Dynamics of CdTe Nanoparticles Studied by Time-Resolved Spectroscopy*

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**Andrew Attar**

Supervising Professor: Dr. Ken Knappenberger

For applications such as next generation solar energy conversion, research involving fundamental energy/electron transfer processes is a vital step. Nanomaterials such as semiconducting nanoparticles, or quantum dots, hold immense potential for use in next generation solar-voltaic cells. Therefore, fundamental energy distribution processes in these materials has been the subject of recent experimental investigations including those reported in this work. Photoinduced dynamics of CdTe nanoparticles including a detailed study of photoinduced charge transfer from the CdTe quantum dots to their thioglycolic acid (TGA) stabilizing ligands have been elucidated by ultrafast time-resolved spectroscopy. This semiconductor-to-ligand charge transfer event was found to be experimentally controllable due to its dependence on nanostructure bandgap energy. Additionally, through the use of femtosecond transient absorption spectroscopy, we have investigated a novel process of ultrafast photodissociation of the TGA ligand to produce an acetyl radical in its free and CdTe surface-bound form. Utilizing time-correlated single photon counting, we have found that charge transfer from the CdTe quantum dot, whose bandgap spectrally overlaps an excited state in the TGA, results in quenching of the quantum dot's fluorescence by a factor of three when compared to CdTe quantum dots with insufficient bandgap energy to induce the charge transfer event. These results not only highlight the significance of semiconductor-ligand interactions, which are commonly overlooked in these nanoparticle systems, but will also be exploited in the Knappenberger group's continued research involving next generation solar energy conversion.

## MENTORED RESEARCH AND CREATIVE ENDEAVORS AWARDS

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### *The Jazz/Poetry Connection in New York City*

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**Alexander Ariff**

Supervising Professor: Dr. David Kirby

Alexander Gelles Ariff will earn his BA in jazz studies from the College of Music at the conclusion of the fall term. He plans to begin an MA degree in Jazz History and Research at Rutgers University in the spring of 2011.

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### *Redefining the role of intestinal microbes in the pathogenesis of necrotizing enterocolitis*

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**Aviram “Avi” Assidon**

Supervising Professor: Dr. Joshua Rodefer

Avi is a junior Biological Sciences and Psychology double major. He also is the Finance Chair of the Student Senate, the Pi Kappa Alpha Fraternity Secretary, Co-Chair of Noles for Haiti and Administrative Director of the Spire Institute.

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### *Protein Mutations that lead to Temperature Sensitive Sterility*

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**Kany Aziz**

Supervising Professor: Dr. Jamila Horabin

Kany Aziz was born and raised in Tallahassee, Florida and is currently a senior Biology student. She comes from a mixed heritage—Arab and Kurdish—and wants to use her knowledge and experiences to help the world become a better place.

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### *The design of nicotinic therapeutic treatments in the zebra finch without the occurrence of addiction*

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**Dana Boebinger**

Supervising Professor: Dr. Susanne Cappendijk

Dana Boebinger is a Psychology and Music double major, with minors in biology, chemistry, and mathematics. Her research was conducted under the guidance of Dr. Cappendijk, with whom she has been working for the past three summers. After FSU, Dana plans to pursue a Ph.D. in neuroscience.

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### *Vox Clamantis: Contemporary Prophet-Poets*

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**William Philip Boyce**

Supervising Professor: Dr. Amy Koehlinger

William Boyce, a senior from Jacksonville, is working toward a degree in Religion. After already completing an Honors in the Major thesis for creative writing and fulfilling a major in history, he expects to continue his education with post-graduate studies.

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## ***Synthesis and Modeling of Self-Assembling Proteins with Regenerative Capabilities***

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**Alexa Shay Buchanan**

Supervising Professor: Dr. Anant K. Paravastu

Alexa Buchanan is a senior premedical student from Miami, FL majoring in Biomedical Engineering. After graduating, she hopes to obtain her M.D. and potentially begin medical research using engineering methods for advancements in modern-day medicine.

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## ***Phylogenetic Analysis of Sigmodontine Rodents***

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**Rebecca Ann Falter**

Supervising Professor: Dr. Scott Steppan

Rebecca is a junior majoring in Biological Sciences and Computational Science. She is interested in the analysis of molecular data as it pertains to both evolution and genetics. After graduating from FSU, she plans to attend graduate school for bioinformatics.

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## ***Opening to New Forms of Possibility: The relationship between traditional ballet and contemporary dance***

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**Caitlin Hafer**

Supervising Professor: Dr. Sally Sommer

Caitlin is from St. Louis, Missouri and is currently a senior in the Department of Dance. She dances with the university's Dance Repertory Theater and in other student works as well as pursuing her own choreographic, film, music, and research projects.

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## ***High-Fat Diet-Induced Obesity Impairs the Anorexic Response to Glucagon-Like Peptide 1 Receptor Activation***

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**Nina Hyvarinen**

Supervising Professor: Dr. Diana Williams

Nina Hyvarinen is a premedical student pursuing a bachelor's degree in Biological Science and Psychology. She is interested in the neurological and physiological basis of food intake and body weight management, focusing specifically on the interaction between obesity and hunger signaling.

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## ***Neurotransmitter Interactions in a Rat Model of Anxiety***

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**Mary Jeffrey**

Supervising Professor: Dr. Joshua Rodefer

Mary Jeffrey, Psychology/Criminology student, is currently enrolled in the honors program and working on her Honors Thesis with Professor Rodefer's lab in psychology & neuroscience. She aspires to go to graduate school with the goal of becoming a neuropsychologist and study questions involving neuropsychopharmacology.

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## ***Creating the Castle: The Origins of the Fourth Amendment in 18th Century Great Britain***

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**Christopher Land**

Supervising Professor: Dr. James Jones

Christopher Land, a senior Political Science and History major, has had remarkable research opportunities through his experiences at the House of Commons and in the recent general election in the United Kingdom. Centered on the evolution of American governance, his research with Dr. James Jones considers the origins of the Fourth Amendment in eighteenth-century Great Britain.

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## ***The Galapagos Project: A Symbiotic Relationship***

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**Cristina Moscoso**

Supervising Professor: Dr. Linda Hall

Cristina Moscoso is a senior majoring in Studio Art. Her focus on photography and drawing are her main mediums. She is Ecuadorian-American; she was born in New York City and grew up in New Jersey and Miami.

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## ***Effects of Melatonin on the Alzheimer Brain***

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**Anushi Patel**

Supervising Professor: Dr. James Olcese

Anushi Patel is a senior Biological Sciences major working on an Honors Thesis project under Dr. James Olcese at the College of Medicine. She also received the Honors Thesis Award. Anushi will attend the FSU College of Medicine after graduating.

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## ***Automatic Preference: Using the Implicit Association Test with Pregnancy Prejudice***

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**Sean Reynolds**

Supervising Professor: Dr. Kelley Kline

Sean Reynolds is a Psychology major at the Panama City campus of FSU. He has been working with Dr. Kelley Kline on prejudice and preference research and with FSU's Florida Center for Reading Research.

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## ***Adolescent Temperament, Learning Styles & Course Performance***

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**Ekaterina (Katie) Rybakova**

Supervising Professor: Dr. Shelbie Witte

Ekaterina (Katie) Rybakova was born in Moscow, Russia and grew up in New York. She is playing her 4th year for FSU's women's tennis team and pursuing a degree in English education. Her aspirations include receiving a Ph.D.

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## ***Compact Personal Hovercraft***

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**Anthony Sabido**

Supervising Professor: Dr. Emmanuel Collins

Born in Miami, Florida, Anthony moved to Tallahassee to attend Florida State University in 2007. Anthony, a senior, will be graduating from the College of Engineering in 2012. After he receives his undergraduate degree, he hopes to further his education and begin a career in the aviation industry.

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### ***The Five-pointed Star in Etruscan Sigla***

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**Alexander Segers**

Supervising Professor: Dr. Nancy de Grummond

Alexander Segers is a senior from Tampa, Florida majoring in Classical Archaeology. He is currently working on his Honors Thesis, deciphering the five-pointed star pertaining to the Ancient Etruscans, under the direction of Dr. Nancy de Grummond. He is a cat person and enjoys long walks on the beach.

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### ***Forgotten Frontrunners: The Tallahassee Sit-ins 50 Years Later***

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**Michael Shea**

Supervising Professor: Dr. Stanley Gontarski

Michael Shea is a senior double majoring in English Literature and Philosophy. His interests include civil rights, Hispanic literature, 20th century studies, and poetry. After graduation, he plans to pursue an MFA in poetry as well as a Ph.D. in comparative literature.

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### ***Are Soy Effects Due to Presence of Phytoestrogens or Other Compounds?***

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**Iliana Tegov**

Supervising Professor: Dr. Lisa Eckel

Iliana Tegov is a senior who was born in Bulgaria. She is currently pursuing a dual-degree in Biology and Psychology and aspires to attend medical school. Her research was conducted with the guidance of Dr. Lisa Eckel and Dr. Ann-Marie Torregrosa.

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### ***Effects of Genistein treatment on the chromatin structure of human leukemia cell line***

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**Meghan Webb**

Supervising Professor: Dr. Jonathan Dennis

As a junior pursuing a degree in Biological Science, Meghan Webb has been conducting research in the Microbiology lab of Dr. Jonathan Dennis for a year now. Upon graduation, Meghan intends to continue on to medical school. She hopes to become a Pediatric Surgeon and work internationally through Doctors Without Borders.

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