

UNDERGRADUATE  
SCHOLARSHIP  
IN THE COLLEGE OF  
ARTS AND SCIENCES

2011 Book of Abstracts  
Winthrop University

# Introduction

**“The art and science of asking questions is the source of all knowledge.”**

—Adolf A. Berle, Jr., lawyer, educator, author, and U.S. diplomat (1895-1971)

The College of Arts and Sciences proudly presents *Undergraduate Scholarship in the College of Arts and Sciences Book of Abstracts*, our ninth annual issue documenting the work conducted by students in collaboration with their faculty mentors. As you will see by the depth and variety of the projects, these students successfully used their research, critical thinking, and writing skills to produce scholarship that has been recognized by the larger scholarly community.

The work documented here illustrates how effective undergraduate research is at providing valuable learning experiences to students and why it is recognized as one of the high-impact educational practices that increase the rates of student retention and engagement. Participating in undergraduate research can help students prepare for professional and graduate programs and enhance their professional and academic credentials to support applications for scholarships, awards, career employment, and entry into graduate and professional school. While engaging in undergraduate research, students develop one-on-one mentoring relationships with faculty members, clarify academic and career interests and goals, acquire additional knowledge in their academic fields that transcends classroom study, and enhance critical skills in communication, independent thinking, creativity, and problem solving. Moreover, students have the opportunity to contribute to the creation of new knowledge on the cutting edge of their academic disciplines and apply that knowledge to real world problems.

We congratulate the students for the quality of their work and their willingness to share it with the academic community through publications in refereed journals and presentations at regional, national, and international meetings. We also recognize and appreciate the quality of the mentoring by our faculty who teach the students the “art and science of asking questions,” how to interpret the results, and how to disseminate the knowledge at a professional level.

The production of the book itself is an undergraduate project; we thank Glenna Baron, a Visual Communication Design major, for her work on the cover design and interior text, and also Alyssa Baker, Annick Hernandez, and Tommy Hines, Visual Communication Design majors, for laying out the interior book text. We also thank the graduate assistant in the undergraduate research office, Joshua Bowers, for editing the abstracts. We hope you enjoy our *Book of Abstracts*.

Dr. Dwight Dimaculangan  
Director of Undergraduate Research  
College of Arts and Sciences

Dr. Debra C. Boyd  
Dean of the College of Arts and Sciences  
April 2011

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# Winthrop University Undergraduate Research Initiative

## College of Arts and Sciences

The Winthrop University Undergraduate Research Initiative (WUURI) supports a student-centered learning environment that fosters student research, scholarship, and creative activities. The Initiative encourages students and faculty mentors to collaborate in the design and implementation of projects and the dissemination of results.

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# Publication Abstracts

## STUDY OF EPIDERMAL CELL SIZE OF PETALS AND STAMENS IN TOMATO SPECIES AND HYBRIDS USING CONFOCAL LASER-SCANNING MICROSCOPY

*Published online Lofty C. Smith J. Stoeva-Popova P. 2010. Report of the Tomato Genetics Cooperative, Vol.60, p.58-66, 2010*

**Student: Christopher Lofty** 2011

Faculty Mentors: Pravda Stoeva-Popova, Ph.D. and Julian Smith III, Ph.D.  
Department of Biology (BIOL 471, 472 - Stoeva-Popova)

The phenomenon of cytoplasmic male sterility (CMS) has been described and the genetics underlying the phenomenon studied in many species. The most prominent CMS effects are abnormal stamen development, aborted pollen, and reduced petal size. Similar phenotypes affecting the size and color of stamens and petals and post-tetrad degeneration of pollen are characteristic for the CMS line (*CMS-pennellii*) which resulted from crosses involving *Solanum peruvianum* (pistillate parent) and *S. pennellii* (pollinating parent). This study has focused on the comparative analysis of the size of epidermal cells from abaxial and adaxial sides of petals and stamens of mature flowers from *CMS-pennellii* line (0% stainable pollen), the maintainer species *S. pennellii*, the donor of the cytoplasm *S. peruvianum*, the cultivated tomato *S. lycopersicum*. Petals and filaments were treated with calcofluor fluorescent brightener and imaged using a confocal laser scanning microscope. Due to the thickness of the anthers, the observations for them were carried out with the scanning electron microscope. The size of the cells was measured using ImageJ. The comparison between the size of abaxial and adaxial epidermal cells showed that there were statistically significant differences, and the direction of the differences is both species- and structure-specific. The common feature for *Solanum pennellii*, *S. peruvianum* and *S. lycopersicum* was that the smallest cells were observed on the epidermis of petals. The anther and filament cells in *S. pennellii* were the largest compared to the other two species. Our data showed that CMS has a significant effect on the pattern of development and size of the epidermal cells. The mean size of the abaxial epidermal cells of the CMS anthers was significantly smaller than the adaxial ones opposite to the observed pattern in *S. pennellii*. In comparison to *S. pennellii*, the size of the epidermal cells on the CMS anthers and filaments was significantly reduced, with more extreme reduction (3.5-4.1-fold) observed in the filaments. The comparison of the size of the petal epidermal cells showed that there was no statistically significant difference between the cell size on the adaxial surface of the CMS line and *S. pennellii*, while the cells on the abaxial surface of the CMS line were significantly larger.

This research shows that the size of the epidermal cells on stamens and petals differs and is a species-specific characteristic for the studied tomato species. Since *CMS-pennellii* and *S. pennellii* share the same nuclear genome our data demonstrates that cytoplasmic male sterility in tomatoes has a significant differential effect on the expansion and division of epidermal cell of petals, anthers and filaments.

## NEWTONIAN BLUES

*Published in the 2011 spring edition of the online literary magazine The Smoking Poet*

*Presented at the English Department's Undergraduate Research Conference's Creative Showcase*

**Student: Javy Gwaltney 2011**

Faculty Mentor: Josephine Koster, Ph.D.

Department of English

The "Newtonian Blues" tells the humorous and tragic story of Tom Scarab, a lecherous young man intent on escaping a fatal generational curse. It is a story about realizing the inevitability of death and rising to meet it head on, albeit with mixed results.

## Honors Thesis Abstracts

### COMPARATIVE ANALYSIS OF ADOLESCENT PREGNANCY IN SOUTH CAROLINA, MEXICO AND CENTRAL AMERICA

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011 and the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: A. Elizabeth Jenkins 2011**

Honors Thesis Committee: Wendy Campbell, Ph.D., Brent Cagle, Ph.D., Susan Lyman, Ph.D.

Department of Social Work

This paper is a qualitative research project about the current initiatives implemented in order to combat high adolescent pregnancy rates in Mexico, Central America and South Carolina. The paper has a large literature review that analyzes and discusses various psychosocial causes for these exceptionally high instances of pregnancy in adolescents, including the following: little access to formal education, limited open discussion about sexual health or pregnancy prevention, the cost and availability of adequate birth control, and remote location as an impediment for access to all of these. This research paper contains current statistics and the different projects and programs already in place. It displays research about the validity and efficacy of these programs and compares the successes of different types of programs in the United States and Latin America. As the final section of the literature review, the paper addresses implications for the research and how programs that have been successful in Mexico, Central America or South Carolina could be adapted to work in the other area. In order to determine current practitioners' views on current programs and projects' implementation and success in Mexico, Central America and South Carolina, a survey was created and sent to various human services professionals who work with pregnant and parenting adolescents. The findings and discussion of the results of this survey are the final section of this thesis project.

### AN EXPLORATION OF VARIABLES THAT PREDICT COLLEGE STUDENTS' ATTITUDES TOWARD SERVICE LEARNING

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Amanda Mcleod 2011**

Honors Thesis Committee: Donna Nelson, Ph.D., Kathy Lyon, Ph.D., Merry Sleight, Ph.D.

Department of Psychology

Our project investigated college students' attitudes toward service learning in their college curriculum. Much of the current literature about service learning has examined the relationship between service learning and civic engagement (Prentice & Robinson, 2007; Spring, Dietz, & Grimm, 2006.) Research shows that the quality of the service experience determines the extent to which it has a favorable impact on the participant (Gallant, Smale, & Arai, 2010; Rosing, Reed, Ferrari, & Bothne, 2010). We extended this work by exploring variables that may be linked to students' perceptions of service learning in college. Family support for community service was associated with more favorable student attitudes toward service learning in college. Positive attitudes about community service in general were linked with more favorable attitudes about service learning and greater participation in service projects as part of the college curriculum. However, the greater the number of mandatory service projects the student had participated in, the less favorable their attitudes were about service learning. No association was found between attitudes toward service learning and religiosity, age, gender or race of the student.

### **EPIDERMAL STEM CELLS IN AEOLOSOMA HEADLEYI (ANNELIDA)**

*Presented at the National Collegiate Honors Council Conference, October 2010*

*Supported by a Winthrop Research Council Grant*

**Student: Sara Merlie** 2011

Honors Thesis Committee: Julian Smith III, Ph.D., Laura Glasscock, Ph.D., Paula Mitchell, Ph.D.

Department of Biology  
(BIOL 300 – Smith)

Previous studies in annelids suggest that these worms may possess a replicating epidermal stem cell population; however, it is unknown whether these cells correspond to previously described basal cells. This study uses EdU- and anti-Phosphorylated H3-labeling to examine epidermal S-phase and mitotic cells in *Aeolosoma headleyi*, an annelid known to possess basal cells. S-phase and M-phase cells were found in the epidermis both in the fission plane and general body wall, but not all were basally located. Furthermore, some S-phase cells had the nuclear morphology of differentiated cells. Based upon progressively shortened EdU labeling times, the length of G2 was estimated to be less than 60 min. This study suggests a method of epidermal replacement dependent on dedifferentiation and the division of differentiated epidermal cells and also establishes this species as a model organism for the study of stem cells in annelids.

### **TIMING AND CONTENT OF MACRONUTRIENT INTAKE BEFORE AND AFTER ENDURANCE EXERCISE FOR OPTIMAL PERFORMANCE AND RECOVERY**

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Carly Moss** 2011

Honors Thesis Committee: Carlton Bessinger, Ph.D., Christine Goodner, Ph.D., Sarah Stallings, Ph.D.

Department of Human Nutrition

The purpose of this literature review is to assess primary research studies on the appropriate timing and nutrient content of meals before and after competition and training of different intensities and durations for optimum athletic performance in endurance sports. Studies show the effects of the timing and amount of ingestion of lipids and carbohydrate before exercise on physiologic and metabolic responses and on physical performance during the exercise. Topics in this review include the effects of different types of pre-exercise fat intake and the glycemic index of pre-exercise foods on substrate availability and oxidation and exercise performance. Other studies demonstrate the effects of the timing and amount of ingestion of protein and carbohydrate after exercise on physiologic and metabolic responses during recovery and on athletic performance during subsequent training sessions. This review addresses the effects of post-exercise carbohydrate and protein intake on glycogen and skeletal muscle synthesis. This review aims to expand on the cited literature by explaining the mechanisms behind the determined metabolic and physiologic responses during exercise and recovery as well as by examining how these responses affect athletic performance. The Food Processor computer software program was utilized in the formulation of adequate pre and post-exercise meals based on conclusions drawn in the review.

### **BIOINFORMATIC INVESTIGATION OF REGULATORY NETWORKS OF HMGA PROTEINS**

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Carol Perkins** 2011

Honors Thesis Committee: Takita Sumter, Ph.D., Kristi Westover, Ph.D.

Department of Chemistry, Physics, and Geology

The High Mobility Group A (HMGA) proteins - HMGA1a, HMGA1b, and HMGA2 - are elevated in human cancers and have a distinguishing role in cancer initiation and progression. Despite emerging understanding of their mechanisms of action, intricate details of exactly how these proteins trigger cancer initiation is still unclear. To better understand how the cell elevates these proteins, we are exploring the role of the Wnt signaling pathway in regulating HMGA proteins. Bioinformatic analysis of the HMGA1 and HMGA2 promoters was conducted to identify sequences and evaluate the evolutionary conservation of putative Tcf-4 sequences (5'-WWCAAAG-3'). For HMGA2, three highly conserved sequences have been identified and analysis of *hmg1* is underway. These studies suggest that the regulation of HMGA expression may occur via the Wnt signaling cascade and identify a potential pathway that can be targeted for the development of molecular cancer therapies.

### **ADULTS' PERCEPTIONS OF SAFETY ON FACEBOOK AND WILLINGNESS TO BEFRIEND A STRANGER**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011 and the Southern Regional Honors Conference, March 2011*

**Student: Amy Rivers** 2011

Honors Thesis Committee: Merry Sleight, Ph.D., Kathy Lyon, Ph.D., Darren Ritzer, Ph.D.

Department of Psychology  
(PSYC 450H – Sleight)

Previous research demonstrates that the popular social networking site Facebook has an impact on users' behaviors on- and offline (Orr, Sisic, Ross, Simmering, Arseneault, & Orr, 2009; Sheldon, 2008). However, little research has been done on Facebook users' perceptions of safety and willingness to interact with complete strangers, which has become an important issue due to Facebook's increasing popularity and internet safety concerns. To examine these research questions, we created a two-tiered project: an experiment to investigate how individuals would react to friend requests from Facebook users they obviously did not know, and a survey, to gather information on Facebook users' perceptions of safety and willingness to interact with online strangers. Abiding by Facebook guidelines, we created four profiles under two names on Facebook (one male profile with a real picture and one with a cartoon picture - likewise for female), randomly added a total of 400 American and Spanish users, and observed differences in acceptance rates. We also distributed a survey online. Overall, we found that users would rather accept a random friend request from a woman and from someone using a real picture instead of a cartoon. There were differences between genders and countries. Participants reported feeling generally safe on Facebook, but utilized a number of strategies to achieve that feeling of safety. We also found that factors such as length of time on Facebook, level of education, number of friends, and age affected users' willingness to share information and interact with online strangers. These findings could be used to understand the complex interactions that take place on Facebook and potentially help to inform young users to utilize the site and perceive their actions as safe.

### SEASONAL WATER QUALITY OF THE GUACIMAL WATERSHED, MONTEVERDE, COSTA RICA

*Presented at the National Collegiate Honors Council Conference, October 2010 and the American Society of Limnology and Oceanography, February 2011*

*Supported by a Winthrop University Research Council Grant, the Dalton Endowment, and the University of Georgia - Costa Rica Student Researcher Scholarship*

**Student: Kevin Ryan** 2011

Honors Thesis Committee: Peter Phillips, Ph.D., William Rogers, Ph.D., Clifton Calloway, Ph.D.  
Department of Biology

Costa Rica, which is renowned for its biodiversity and eco-tourism, is struggling to enact sound environmental management of its surface waters. This honors thesis in biology comments on the overall health of the Guacimal River in the Pacific North West region of Costa Rica. Physical, chemical, and biological parameters were recorded for 18 sampling sites and evaluated along a downstream gradient within the watershed. While pH, dissolved oxygen, and water temperatures were considered normal, the turbidity, specific conductivity, and nutrient concentrations within some sampling sites indicate degraded water quality. In general, macroinvertebrate diversity and density corroborate the observed chemical water quality trends. It is suggested that degraded water quality within some headwater streams is due to historic dairy farming and a growing tourism industry surrounding the Monteverde Cloud Forest Preserve. The effects from these pollution sources are discussed according to an extreme seasonal hydrologic regime characteristic of North West Costa Rica. Offering baseline water quality data for the watershed, this study recommends further monitoring as the biological corridor is managed in the midst of a thriving tourist destination.

### A COMPARATIVE ANALYSIS OF THE GLOBAL FOOD CRISIS IN AN AFRICAN CONTEXT

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Amy Schober** 2011

Honors Thesis Committee: Tim Boylan, Ph.D., Jennifer Disney, Ph.D., Michael Lipscomb, Ph.D.  
Department of Political Science  
(PLSC 490 – Boylan)

This paper looks at the particular causes of food crises in Africa, particularly in the context of a globally organized economy. Many African nations experienced especially high crop yields in 2008 amid low yields elsewhere in the world. Supply and demand dictated that in a year of overall low yields the price of food would increase. However, shifts in ownership of the means of production along with shifts towards export-led economies prevented Africans from benefiting. Rather, those who have turned away from subsistence farming were pulled into the market economy and found themselves vulnerable to entitlement failures when the world market experienced these jolts. Vulnerability to fluctuations on the world market can have devastating outcomes for people who spend such a high percentage of their earnings on food.

### THE EFFECTS OF PRIMING ON PERCEPTIONS OF ALTRUISM AND NONPROFIT ORGANIZATIONS

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Allison Howard** 2012

Honors Thesis Committee: Donna Nelson, Ph.D., Merry Sleigh, Ph.D., Jeff Sinn, Ph.D.  
Department of Psychology

Altruism, from the Latin *alter* or *other*, means in its most basic form, “for the other.” Psychologists have tested for its existence for decades and the controversy of whether or not altruism, or unselfish devotion to the welfare of another, is truth, is still a relevant topic in psychology and the world at large. I drew on my experience as a volunteer intern for the More than Me Foundation, a nonprofit organization, to gauge the sustainability of the real-world application of altruism. My project explored college students’ perceptions of altruism and non-profit organizations and tested whether priming about personal experiences of altruism would change these perceptions. I also explored predictors of participants’ willingness to act altruistically. I found that priming did not significantly affect participants’ perceptions of altruism or non-profit organizations. Similarly, priming about altruism did not influence participants’ willingness to offer help. However, those with positive attitudes about the existence of altruism behaved more altruistically. Positive attitudes about non-profit organizations also predicted altruistic behavior of participants. The possibilities and implications of these results will be related to the psychological topics of modern racism, empathic altruism, the social responsibility norm, and in-group/out-group bias.



# Meeting Abstracts

## THE WILL OF WORDS: THE IMPLICATIONS OF WILLIE STARK'S RHETORICAL SHIFT IN ALL THE KING'S MEN

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Amanda Mayer** 2012

Faculty Mentor: Kelly Richardson, Ph.D.  
Department of English  
(ENGL 324 – Richardson)

Throughout All the King's Men, Willie Stark manipulates rhetorical strategy in interesting ways. I will argue that Willie's rhetorical strategy is transformed as he immerses himself into the world of corrupt political maneuvering. At first, he relies on a calm, rational presentation of facts and figures; however his rhetoric shifts to one of fiery emotional appeals. Notably, this shift mirrors Willie's increasing involvement in big city politics. My argument focuses primarily on the connection between rhetorical choices and character development. Whereas much of the previous research in this area has approached rhetoric as an art form to be studied independently of the thoughts and feelings of its practitioners, my paper argues that rhetorical choices can be highly personal ones with the potential to have a significant psychological impact not only on the audience, but also on the speaker himself. As Willie begins to take on the rhetorical style of the political system which he once swore to fight against, he sinks further and further into corruption and a campaign strategy which is more about promoting the candidate than actually helping his constituents. As the novel progresses, Willie begins to believe his own rhetoric and see himself as the all powerful, avenging figure he markets to his audience. Willie's sense of his own omnipotence and the morally dubious actions his attitude inspires ultimately lead to his destruction.

## THE EFFECT OF VIEWING DISNEY FILMS ON COLLEGE STUDENTS LATER LIFE PERCEPTIONS

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Student: Meagan Hogarth** 2012

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

The present study investigated whether students who viewed Disney films as a child were more likely to stereotype relationships and people with mental illness, as well as have a high rate of aggression. Students completed a questionnaire measuring their relationship expectation, views on people with mental illness, aggressive tendencies, as well as the Disney movies they enjoyed most as a child. While there was a high rate of movies watched that promote relationship stereotypes, none of the scales had a significant impact by the number of the type of movies watched. The results indicate that children who view Disney films as a child are not overly influenced in a negative manner by the material presented.

## MOLECULAR EVOLUTION OF SWINE, HUMAN, AND AVIAN STRAINS OF H5N1 INFLUENZA A IN SOUTHEAST ASIA

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Matthew Horn** 2012

Faculty Mentors: Kristi Westover, Ph.D.  
Department of Biology

The spread of the highly pathogenic and potentially pandemic avian H5N1 influenza strains threatens not only birds, but other non-avian hosts, such as swine, and canines, and humans. Within the last year, avian strains of influenza A epidemic has been documented in Indonesian swine, and even more alarming, Indonesia has reported the greatest number of human cases since the virus first appeared in humans. The evolution of the virus has amplified its ability to spread from mammal to mammal and due to biochemical similarities, there is worry for increasing transmission of the disease from pigs to humans. To investigate this, complete genomes of Indonesian and Chinese influenza A H5N1 strains from avian, swine, and human hosts were collected, translated, and aligned. To date, phylogenetic reconstruction has been completed using the PB2 segment for Indonesian and Chinese swine sequences. Initial results from analysis of the PB2 segment, which plays a significant role in the polymerase enzyme during DNA replication and the initiation of transcription, show a significant relationship between the Chinese strains form the Henan and Anhui provinces and the Indonesia strains. We intend to expand the analysis to include complete genomes, as well as repeat the phylogenetic work with all Indonesian hosts. Further analysis of the swine, avian, and human H5N1 strain may give insight into the transmission of the disease in Asian countries and supply information on future strain adaptations and possible eradication.

## MOOD, SELF-ESTEEM AND PERSON PERCEPTION JUDGMENTS

*Presented at the Southern Regional Honors Conference, Little Rock, Ark., April 2011*

**Students: Elise Comber | Samantha Bodnar | Joshua Roberston**

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

Do mood and self-esteem influence the way we judge other people? Previous research shows that they do in independence from one another. We investigated if mood and self-esteem have a relationship that impacts judgments in a different manner than when studied in isolation. Using previous studies to design our methods, we conducted a mood manipulation and asked participants to make judgments on fictional people while also testing for self esteem. The results were insignificant and did not support our hypothesis, yet they did shed light on the need for well-developed mood manipulation techniques and judgment scales that are not loaded or leading in their presentation.

## THE GREAT CHAIN OF BEING IN MACBETH AND DAEMONOLOGIE

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Amanda Mayer** 2012

Faculty Mentor: Mathew Fike, Ph.D.  
Department of English  
(ENGL 305 – Fike)

The purpose of this paper is to Use James I's Daemonologie -- his treatise on witchcraft -- to analyze Shakespeare's portrayal of witchcraft in Macbeth. Previous studies by feminist critics like James Schiffer and Dennis

Biggens argue that the witches represent a fear of feminine power and authority. In contrast, the present study suggests that Shakespeare's portrayal of witchcraft engages in a dialogue about the nature and order of power that transcends sexual politics. In Macbeth, Shakespeare incorporates James I's argument that witchcraft is inherently evil because it subverts the hierarchy of power known as the Great Chain of Being. Since the play thus supports the very power structure that the Gunpowder Plot sought to undermine, Shakespeare's play becomes an attempt to curry favor with James, his king and patron.

### MUSIC AS A SELF-REGULATED STRATEGY TO CHANGE MOOD

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: A. Nikki Williams** 2011

Faculty Mentor: Merry Sleigh, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleigh)

The purpose of this two-phase project was to see if music could be used as an intentional strategy to alter mood. In contrast to previous experiments where researchers selected and played music to participants, our participants were allowed to self-select music on their personal MP3 players. In the first study, participants listened to music that either matched or was the opposite of their current mood. We found that when participants listened to music that matched their mood, the mood was maintained. In contrast, when participants listened to music that was the opposite of their mood, they had changes in both their good/bad mood and their calm/nervous state. Music majors and men were particularly prone to mood change. This finding suggests that music does have the power to maintain or change moods, and the strategy is effective even when people are aware of it. In the second study, we compared two emotional regulation strategies. Participants were first induced to have a negative mood. Half of the participants engaged in a writing assignment designed to elicit an improved mood, while half of the participants listened to self-selected music also intended to improve mood. Although both strategies resulted in mild increases in positive mood and mild decreases in negative mood, the two strategies were not significantly distinct from one another. In other words, music was as effective as a positive reframing exercise in changing mood. We also examined whether gender had any impact on the effectiveness of these two strategies. Our results revealed that there was no gender difference related to negative mood change. These two strategies were equally effective in changing negative mood for both men and women. However, women's positive mood increased only in the writing condition, whereas men's mood increased significantly more in the music condition. In other words, writing about an event in a positive light helped women, and listening to music helped men feel better. These findings provide much-needed experimental evidence that music may be an effective, self-regulated therapeutic strategy to manage mood.

### ELUCIDATING PREFERRED STRUCTURES IN DIMERS OF ALZHEIMER'S AMYLOID-BETA PEPTIDE

*Presented at the 241st American Chemical Society National Meeting, Anaheim, Calif., March 2011*

*Supported by the National Science Foundation Grant*

**Student: Abigail Bradner** 2012

Faculty Mentor: Robin Lammi, Ph.D.  
Department of Chemistry, Physics, and Geology

Amyloid- $\beta$  (A $\beta$ ) is a protein of 39-43 amino acids that self-associates into toxic aggregates linked to Alzheimer's disease. Although A $\beta$  fibrils were long believed to be the disease-causing agents, recent evidence links Alzheimer's progression to increased concentrations of A $\beta$  dimers and trimers. We have employed Forster resonance

energy transfer (FRET) to probe for preferred structures in A $\beta$  dimers. Using single-molecule fluorescence methods, we have investigated surface-tethered A $\beta$  40 dimers, one at a time, identifying two characteristic FRET efficiencies. These results are matched by measurements of fluorescence lifetimes in bulk solution, suggesting that the single-dimer FRET efficiencies reflect solution structures, unperturbed by surface tethering. Filtering of single-dimer intensity profiles reveals that approximately 35 percent of dimers visit two characteristic FRET efficiencies, likely indicative of time-dependent structural dynamics. Collectively, these results are consistent with the observation of two characteristic dimer structures that may interconvert over time.

### GEOCHEMICAL ALTERATION OF ENDOMYCORRHIZAL FUNGAL SPORES AT ELEVATED TEMPERATURES

*Presented at the Geological Society of America National Meeting, Denver, Colo., October 2010*

*Supported by a Winthrop University Research Council Grant and the Dalton Endowment.*

**Student: Adam Balint** 2010

Faculty Mentor: Scott Werts, Ph.D.  
Department of Chemistry, Physics, and Geology

The objective of this study is to identify and categorize the organic and inorganic transformations of various endomycorrhizal fungal spores collected from the high semi arid plains of Arizona and a temperate forest of Maryland at varying temperatures in an effort to better quantify the effects of surface fire on mineral soils. Prior research from a typical eastern US forest soil has revealed that these fungal spores are structurally resistant to high temperatures (up to 500°C) and are morphologically indistinguishable from their unburned counterparts. We believe this to be, in part, due to the presence of biomineralized structures in some of the species. Carbon and nitrogen elemental and stable isotope analysis on bulk fungal spore samples from Maryland has shown a decrease in total percent carbon with a corresponding increase in  $d^{13}C$  values between 250° and 350 °C. Analysis on total percent nitrogen and  $d^{15}N$  percent produced similar results. There will be a continuation of this project on the Arizona samples to see if endomycorrhizal species from varying environments will portray the same characteristics.

### AN EXAMINATION OF LOCATION AND TYPE OF TATTOO ON PERCEPTIONS

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Adrienne Galassie** 2011 | **Danielle Stacks** 2010

Faculty Mentor: Merry Sleigh, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleigh)

An increasing number of people are getting tattooed, and young women are the largest-growing segment of the population getting tattooed (Hawkes, Senn & Thorn, 2004; Swami & Furnham, 2007). This study sought to compare perceptions of women with tattoos to perceptions of men with tattoos, and to study whether viewers make personality attributes to people with different types of tattoos. Seventy-eight adults responded to surveys containing pictures of female and male models with tattoos. The same picture of the model was used, but the placement of the tattoo was varied using computer technology. The tattoos shown were a cross, a star, and an Asian symbol. The tattoos were placed on the back, arm, or torso. Regardless of tattoo placement, participants rated models similarly on attractiveness, professionalism, intelligence, and obedience. However, participants who viewed the female with a cross on her back found her less interesting than a female with a cross in other locations. Participants who viewed tattoos on the back were less likely to want to get a tattoo. Democrats were more likely to agree that tattoos are a form of artwork and were more attracted to people with tattoos. For almost every variable studied, African-Americans rated the models more positively than Caucasians. African-

Americans were more likely to view tattoos as a form of artwork, were more attracted to people with tattoos, had more tattoos, and were more likely to get a tattoo in the future. It was found that participants who considered tattoos to be a form of artwork were more attracted to people with tattoos, and were more likely to have a tattoo or get one in the future. They were also more likely to have a piercing. Ultimately, women, African-Americans, and Democrats felt more positively towards tattoos. Our study did not reveal a stigma against women with tattoos as reported in previous research. These findings reflect a possible change in perceptions of tattoos, perhaps as a result of their increasing commonness.

#### **ABERRANT SELF-PROMOTION, NARCISSISM, AND ACADEMIC CONFIDENCE**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Adrienne Galassie** 2011

Faculty Mentor: Darren Ritzer, Ph.D.

Department: Psychology  
(PSYC 471/472 – Ritzer)

Aberrant Self-Promotion (ASP) is a personality construct that encompasses people who tend to act for their own self interest. These people exhibit traits like superficial charm, lack of empathy, and untruthfulness. Ritzer and Gustafson (1992) found that the ASP construct is characterized by a pattern of high narcissism and moderately high psychopathy. The present study sought to target individuals who exhibit these traits. It was expected that the scales would accurately locate a population of ASPs in a nonclinical, non-criminal college sample. It was also expected that this group would show differences from the normative sample in their confidence on a difficult academic achievement test. Participants included 62 women and 24 men. Participants answered seven trivia questions created by the researcher and responded to how confident they were on each question using a four-point Likert scale. Then, participants completed the Narcissistic Personality Inventory (Emmons, 1987) and the Self-Report of Psychopathy Scale (Hare, Harpur, & Hemphill, 1989). Thirteen participants scored one standard deviation above the mean on the SRP, and thirteen people scored one standard deviation above the mean on the NPI. There were five participants that achieved these scores on both scales. It was found that those who scored high on the SRP also scored higher on the trivia quiz and were more confident in their answers. Those who scored high on the NPI also were more confident, though they did not achieve higher scores on the trivia quiz. However, these differences were not significant. Men scored higher on the NPI, as well as the SRP, than did women. Significant differences between ethnicity groups were found as well on the NPI with African Americans scoring higher than Caucasians. For the SRP, the only differences found were between religious groups with Buddhists scoring higher than Christians. There were no significant differences for honors students, sorority/fraternity members, student athletes, or people who were employed. This study has provided further evidence that aberrant Self-Promotion is a coherent personality construct. Since a number of ASPs were targeted using this approach, utilizing the NPI and the SRP together can be used as a targeting instrument for the ASP personality pattern. The results also show that there is some overlap between narcissism and psychopathy, but this tool can help differentiate between these groups.

#### **ADULTS' WILLINGNESS TO BEFRIEND A STRANGER AND PERCEPTIONS OF SAFETY ON FACEBOOK**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Amy Rivers** 2011

Faculty Mentor: Merry Sleight, Ph.D.

Department: Psychology

We examined people's willingness to befriend a complete stranger, their intended audiences for posts, privacy features they used, and why they used FB. Eighty-two participants (mean age = 25), recruited through FB, answered an online survey about their FB habits that included both quantitative and qualitative data. Results revealed that participants used FB mainly to interact with friends, with 94% of participants viewing their friends as the main audience of their posts on FB, and 89% of participants sending friend requests to close friends. Only 7% of participants admitted sending friend requests to strangers on FB. We also found that many participants, at one point or another, had accepted friend requests from strangers. When participants admitted accepting friend requests from strangers, they said they did so because they went to the same school as the stranger, enjoyed meeting new people, or thought they had met the stranger in the past and forgotten. For privacy, participants were most protective of their pictures and the posts they and others have made on their walls (79% of participants), although 6% of participants enacted no privacy features. We also found that the longer participants had been on FB, the more friends they had on FB, the more information they revealed about themselves, the more they agreed that they would accept a male stranger request if they had common friends, the more they agreed that they would accept a male stranger as a FB friend if he was attractive, the more friend requests they had received from an unknown male, and the younger they were. Participants felt safe about using FB, rating it as 3.34 (sd = .90) on a five-point safety scale. The more friends participants had on FB, the safer they felt using the site. No other variables affected participants' perceptions of their own safety, including age, education level, self-esteem or past victimization. However, the more educated the participants, the less willing they were to accept friend requests from any type of stranger (male, female, attractive, from the same school, etc). This data can help us to better understand safety on FB, an issue that receives more media than research attention.

#### **PREDICTORS OF WILLINGNESS TO ACCEPT FACEBOOK FRIEND REQUESTS FROM STRANGERS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Amy Rivers** 2011

Faculty Mentors: Merry Sleight, Ph.D., Darren Ritzer, Ph.D., Kathy Lyon, Ph.D.

Department of Psychology

The social networking tool, Facebook (FB), has become an increasingly popular forum for psychological research (Lou, 2010; Lewis & West, 2009; Seder & Oishi, 2009). This study attempted to increase the knowledge of behavior within the FB community by experimentally examining peoples' willingness to befriend a complete stranger. Complying with all of FB's policies and privacy regulations, we created four FB profiles. Two of the profiles used a cartoon picture of an orange smiley face bearing the name of either Kim or Josh Angle. The other two profiles used the high school photos and names of Kim and Josh Angle. The profiles were identical with the exception of the name and the picture, and the privacy setting on all profiles restricted all information beyond name and profile picture. In other words, all profiles provided limited information on which invited friends could make a decision. For each profile, 100 people were sent a request for friendship, for a total of 400 participants. Each profile invited 25 American (US) men, 25 US women, 25 Spanish

men, and 25 Spanish women. One male and one female were invited with each last name (randomly selected from common last names) to avoid duplicate requests. Only the last names of participants were recorded, and all profiles (including participants who accepted the friend request) were deleted within two weeks of their creation. Results revealed that people with more FB friends were more likely to accept the random requests, and participants were more willing to accept a friend request when an actual picture was provided rather than a cartoon. The female profile received higher acceptance rates than the male profile in both conditions (pic versus cartoon). We found that US participants accepted both of the real profiles more often than the cartoon profiles. US participants also chose to accept Kim's profile more than Josh's each time. US Caucasians, of all races, were most reluctant to accept the friend request from a stranger. Spanish participants did not display a preference between Josh's profiles, but they significantly preferred Kim's real profile to her cartoon profile. These findings expand our growing understanding of Facebook and its users. Our data show that people will accept friend requests from strangers, and that characteristics of the Facebook profile as well as characteristics of the invitation's recipient influence people's willingness to accept such a request.

#### **OUR IRON LUNG: THE EVASIVE ANTI-GLOBALIZATION MOVEMENT**

*Presented at the 40th Annual Meeting of the N.C. Political Science Association, Charlotte, N.C., February 2011*

**Student: Andrew Davis** 2011

Faculty Mentor: Jennifer Disney, Ph.D.  
Department of Political Science  
(PLSC 506 – Disney)

There is little doubt that the anti-globalization movement represents the most radical, yet articulable form of left-wing popular political action in the world today. However, scholars have had much difficulty examining this movement as it, like the hegemonic discourse it seeks to dismantle, offers at once the tools with which to dismantle global capitalism and at the same time arouses the type of critical left that makes radical insurgent politics inefficacious. Despite the inadequacies of particular theories, this paper provides a survey of social movement literature in an effort to create an amalgamated theory which might prove resourceful in explaining this movement that has defied explanation or over-simplification thus far. This research has grown from several projects that examined quantitatively particular anti-globalization protest events. Previous research projects on this topic have proved rather unsuccessful due to the unquantifiable elements that both challenge researchers but also seem to lend credence to the revolutionary potential of this movement. As such, this research will also examine many qualitative elements and theoretical questions that may provide insight for future research on the anti-globalization movement.

#### **N.C. AND S.C. COLLEGE NEWSPAPERS' USAGE OF THE FREEDOM OF INFORMATION ACT**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Anna Douglas** 2011

Faculty Mentor: Larry Timbs, Ph.D.  
Department of Mass Communication

Journalists across the country say that the Freedom of Information Act (FOIA) is important to doing their job, according to a 2002 survey by the Better Government Association and the organization of Investigative Reporters and Editors. But are student journalists filing FOIA requests before they enter the workforce? This paper will explore the extent to which student newspapers on North Carolina and South Carolina's college and university campuses are using their state's Freedom of Information Act. A survey of N.C. and S.C. college newspapers' usage of the FOIA will be emailed to the editors and faculty advisers of these newspapers. (A personal phone call from the researchers will alert the respondents to the emailed survey and will explain

the purpose of the study.) The survey will yield data that will reveal how student journalists use the FOIA as a tool to access newsworthy information about the state's institutions of higher education. The survey will also be designed to provide insight into the extent to which universities, both private and public, are forthcoming with information requested. Open record laws aid the free flow of information and ideas in this state and in this country but only work when citizens, specifically journalists, file requests for information. In addition to emailing our survey, follow up interviews will be conducted with a sampling of the student editors and faculty advisers-all with the purpose of gaining a better understanding of how collegiate journalists in South Carolina and North Carolina employ their state's Freedom of Information Act as a reporting tool.

#### **TRANSCRIPTIONAL ACTIVATION OF THE HMGA1 PROMOTER THROUGH THE TCF-4/ $\beta$ -CATENIN PATHWAY**

*Presented at the 10th Annual Biomedical Research Conference for Minority Students, Charlotte, N.C., November 2010 and the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

*Awarded "Excellence in Scholarly Research" at the National Ronald E. McNair Symposium*

*Supported by the South Carolina IDEa Networks of Biomedical Research Excellence Grant from NIH, a Research Initiative Grant from NSF, and an Academic Research Enhancement Award from NIH*

**Student: Ashton Brock** 2011 (McNair Scholar)

Faculty Mentor: Takita Sumter, Ph.D.  
Department of Chemistry, Physics, and Geology

High Mobility Group A1 (HMGA1) proteins are biological mediators with roles in viral integration and neoplastic transformation. HMGA1 proteins correlate with human malignancy in adults. We previously showed that mice bearing the *hmga1a* transgene develop aggressive lymphoid disease that resembles human T-cell acute lymphoblastic leukemia. Although this evidence supports a role for HMGA1 in malignant transformation, the molecular networks surrounding HMGA1-induced transformation are not clear. Gene expression profiling and proteomic studies suggest that the protein acts by inhibiting tumor suppressor function and driving the expression of oncogenes. Consistent with these observations, HMGA1 is a target of c-myc and transactivator of cyclooxygenase-2 COX-2 and cyclin D. Interestingly, these genes are all dysregulated in colon cancer resulting from impaired tumor suppressor function of adenomatous polyposis coli (APC). Mutations in the *Apc* gene are associated with the earliest stages of colon carcinogenesis. These mutations activate the Wnt signaling pathway, resulting in stabilization of  $\beta$ -catenin which then binds to T-cell factor-4 (Tcf-4) causing increases in target gene expression. Because HMGA1 expression is overexpressed in most cancers and has known interactions with several Wnt-responsive genes, we explored the involvement of HMGA1 in Wnt signaling. Our initial studies showed a direct correlation between loss of APC function and overexpression of *hmga1*. Here, we investigated deregulation of Tcf4/ $\beta$ -catenin signaling as a potential mechanism for overexpression. Bioinformatic analysis of an 8000 bp *hmga1* promoter region was conducted to search for potential Tcf binding elements (TBE). Two highly conserved sites (TBE 1 and TBE 2) comprising the classic Tcf-4 sequence (5'-WWCAAAG-3') were identified and tested for interaction with Tcf-4 in electrophoretic mobility shift assays. TBE1 and TBE2 were able to form DNA-protein complexes with recombinant Tcf-4. These findings provide the first definitive evidence for the direct regulation of HMGA1 expression by the Tcf-4/ $\beta$ -catenin.

## GENE EXPRESSION SILENCING OF THE LPA1 RECEPTOR BY RNA INTERFERENCE IN DF-1 CHICKEN FIBROBLASTS

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

*Received Honorable Mention for Outstanding Poster Presentation*

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

### Student: **Brittany Stapleton** 2012 (McNair Scholar)

Faculty Mentor: Kimberly Wilson, Ed.D.  
Department of Biology

Lysophosphatidic acid (LPA) functions in several ways in the cell and has been reported to be involved in multiple biological systems. The biological system that involves LPA and that was of most interest to us was the visual system. LPA has been reported to be involved in cortical growth, myelination, pain, hyperexcitability, and axon expansion. LPA works as a repulsive molecule in axon guidance and may serve as axon guidance cue. Our aim was to test the pRFPRNAiC RNAi vector system to determine if it could be used to silence LPA receptors in the DF-1 chicken fibroblast cells using RNAi technology. Thus, we hoped to silence the expression of LPA receptors using the pRFPRNAiC vector and confirm this effect using real-time PCR analysis. We isolated RNA from DF-1 chicken fibroblasts cells and used traditional RT-PCR to verify the presence of LPA receptors 1-5. Our results showed that the LPA5 receptor was not present in DF-1 chicken cells. Our results also showed that the gene expression of the LPA1 receptor was greatly reduced as compared to our control (pRFPRNAiC vector alone) based on real-time PCR analysis. However, these results were not statistically significant because of the variation in fluorescent intensities among the samples. These results suggest that the pRFPRNAiC vector system can be used for silencing LPA receptors in DF-1 cells; however, we conclude that further testing of the vector system is warranted.

## PIETY & PERVERSION: THE INTENT AND APPLICATION OF THE FIRST CRUSADE

*Presented at the Longwood Medieval Conference, April 2011*

### Student: **Bryant Young** 2011

Faculty Mentor: Josephine Koster, Ph.D.  
Department of English  
(MDST 300 – Koster)

The conceptions of the Crusades and their legacy may be more tangible to some than the events that actually transpired. In my writing, I wanted to explore the origins of the Crusading mentality, and the ways in which it evolved throughout the engagement. This entails addressing both the socio-religious mentalities of the era, and the complementary nature of religion and warfare. I considered how the conception of 'divine intervention' suffused and legitimized the efforts of the Crusaders. I studied how the social hierarchy of the eleventh century helped and hindered the growth of the Crusade from thought to reality. Moreover, I traced the fluctuations in the resolve of the Crusaders from their earliest engagements to the siege of Jerusalem. I studied how the social order dictated the spread and success of the Crusading mentality. I addressed the motivations that existed for each social class, and how that impacted those involved in combat. Most importantly, I wished to locate any discernable perversion of the Crusading ideal that arose from preexisting social divisions. This includes, but is not limited to the following: anti-Semitism, avarice, martyrdom, and scholarly manipulation of Biblical context. I observed the impact that success and failure in battle had on the mentality and convictions of the Crusaders, which I also approached by social divisions. I noted the revisions that warfare necessitated upon the clergy, and also how the clergy were perceived by the combatants.

## YOUNG ADULTS' PERCEPTIONS OF INTERRACIAL RELATIONSHIPS

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

### Students: **Catherine Zende** 2012 | **Jasmin Sanders** 2012 | **Beth Glenn** 2011

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

Interracial marriages in America account for less than 5% of the population and this rate has been stable for many decades (Knox, Zusman, Buffington, & Hemphill, 2000). Recent research reveals that Black men and White women express more favorable attitudes towards interracial dating than Black women and White men (Schoepflin, 2009). The purpose of the current study was to further evaluate Black and White adults' perceptions of interracial relationships. Participants were 72 young adults; 51% were Caucasian/White and 38% were African-American/Black. There were four versions of our survey each with one picture of a heterosexual couple: White man and woman, White man and Black woman, Black man and White woman, or White man and Asian woman. The four pictures shared similar facial expressions, body position, attractiveness, and distance from camera. Each participant received one version of the survey. Participants were asked to respond to a series of questions after viewing the photo that assessed the perceived happiness, perceived familial support, and the perceived basis of the relationship. Participants were told that the study was designed to assess people's ability to discern social information from non-verbal cues in order to hide the true nature of the project. Results showed that participants did not perceive the couples differently on their common interests, frequency of arguments, happiness, relationship potential, or sexual compatibility. However, the White couple was believed to have more family and friend support than the White-Black couples, but not more than the White-Asian couple. In addition, the White couple was believed to have more similar religious beliefs than the White-Asian couple. We compared Black and White participants' perceptions and found no differences. We also found that participants who had more experience dating outside their race were more likely to have grown up in a diverse community and were older. In conclusion, we hypothesized that people would have more favorable attitudes toward the same race couple than the interracial couples. Our hypothesis was partially supported. Participants did not perceive any differences among the couples on many variables; however, they did believe that the White couple had the most social support and spiritual commonalities. We did not find differences in the perceptions of our White versus Black participants. In sum, our findings suggest that interracial couples may face unique challenges as well as stereotyped perceptions from both White and Black observers.

## CHOOSING SILENCE: A TEXTUAL EXPLORATION OF VOICE IN FRANCES BURNEY'S EVELINA

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

### Student: **Cayla Eagon** 2012 (McNair Scholar)

Faculty Mentor: Jack DeRochi, Ph.D.  
Department of English

This research explores the role of voice versus silence as it relates to feminism in Frances Burney's epistolary novel *Evelina*. Existing scholarship on this topic looks at the female plights facing both Burney, the author, and *Evelina*, her sixteen-year-old protagonist, in a late 18th century society. Julia Epstein (1986) argues that Burney's use of the feminine medium of the novel creates an empowered female voice in *Evelina*. Approaching the text from a different angle, Juliet McMaster (1989) suggests that hindrances to female expression force *Evelina* into being a "silent angel." Furthering Margaret Anne Doody's (1991) acknowledgement that there is a contrast between *Evelina*'s speechlessness and authorship, I argue that as the novel progresses *Evelina* chooses when and how she will be silent as well as expressive. Her active silence then becomes an untraditional exercise of voice and a form of self-empowerment that overcomes the societal restrictions forced on women of her time.

## **WILDE WOMEN: FEMALE SEXUALITY IN THE IMPORTANCE OF BEING EARNEST AND SALOMÉ**

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Cayla Eagon** 2012

Faculty Mentor: William Naufftus, Ph.D.  
Department of English  
(ENGL 503 – Naufftus)

This paper explores the female characters from two of Oscar Wilde's plays: *The Importance of Being Earnest* and *Salomé*. Although the plays differ greatly in their subject and tone, as do the respective characters, both of them manipulate the traditional notions of gender roles. In consideration of Wilde's use of inversion in his work, this paper argues that Wilde applies that technique in order to invert gender roles and thereby portray his female characters as sexually empowered women. In this way, the women in these works are able to exercise control over men as well as themselves. They are able to act on their own terms. This idea is supported by Wilde scholar Partick M. Horan (*The Importance of Being Paradoxical: Maternal Presence in the Works of Oscar Wilde*) who writes, "Wilde constantly supported sexual equality." Furthermore, Otto Reinert (*"Satiric Strategy in The Importance of Being Earnest"*) confirms that Wilde employs a "pattern of ironic inversion" throughout *IBE*. And finally, Heather Marcovitch (*"The Princess Persona, and Subjective Desire: A Reading of Oscar Wilde's Salomé"*) and Alan Sinfield (*"'Effeminacy' and 'Femininity': Sexual Politics in Wilde's Comedies"*) discuss the palpable sexuality at work in Wilde's plays that supports this argument. In conclusion, Wilde inverts typical gender roles, creating an empowered role for his female characters that liberates them from both society and men.

## **COLLEGE STUDENTS' PERSPECTIVE OF THE SEXTING CULTURE**

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

**Student: Cecile Gadson** 2012 (McNair Scholar)

Faculty Mentors: Tracy Griggs, Ph.D., Cheryl Fortner-Wood, Ph.D.  
Department of Psychology

As technology advances, the way people interact and communicate evolves. Sexting, along with other digital forms of communication, has increased the opportunity for sexual expression and sexually explicit communication in today's society. Research estimates that as many as 80% of young adults have sent or received sext messages (The National Campaign, 2008). The popularity of sexting is reflected in media including television, movies, and music, some of which glorify the behavior, despite the fact it often has negative consequences, including legal charges to minors who sext and miscommunication between the sexters. This study explored the perception of sexting, and the possible miscommunication between sexters, using eight focus groups at a medium sized university in the southeast. Most participants viewed sexting as a normal and exploratory activity used as a flirting and relationship communication tool. Despite this perceived norm, most groups also believed in possible risks related to sexting such as sexual violence, embarrassment, and unwanted public exposure. Seven out of eight groups suggested that there may be a miscommunication between sexters, and half of the groups mentioned danger from differences in how males and females interpret sext messages. Additional findings and implications for results will be discussed.

## **EPIDERMAL STEM CELLS IN NEMERTEA: LABELING OF S- AND M-PHASE**

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

*Received the Outstanding Poster Presentation Award*

*Supported by a Winthrop Research Council Grant*

**Student: Cedric Williams** 2011 (McNair Scholar)

Faculty Mentor: Julian Smith III, Ph.D.  
Department of Biology

Epidermal stem cells in the phylum Nemertea have been poorly characterized and their location is presently unclear. Historically, the stem cells of the epidermis were thought to be basally-located, perhaps with different stem-cell populations for the ciliated epidermal cells and epidermal gland cells. This suggestion by Coe was adopted and reinforced by Gibson in his short text on nemertine biology. However, a more recent review of nemertine ultrastructure by Turbeville pointed out that these basally-located, granule-containing cells are similar to "glial cells" in other invertebrates, and may well be associated with the nervous system. If this hypothesis is true, then exactly which population of cells in the epidermis (if any) divides to replace ciliated epidermal and gland cells is not at all clear. Accordingly, four different species of nemertines were collected and processed for S-phase (using EdU) and M-phase (using anti-phosphoH3) labeling for confocal microscopy. Both S-phase cells and M-phase cells were found to be located within the epidermis of all four specimens. Although labeled cells found using both techniques located both basally and supra-basally in the epidermis, the resolution afforded by confocal microscopy allowed only characterization of nuclear morphology. Thus, we conclude that nemertines possess one or more intra-epidermal stem cell populations and that such cells do not form an exclusively basal population. We are presently extending our studies to the electron-microscopic level to characterize the morphology of the replicating cells.

## **YOUNG ADULTS' CONFLICT RESOLUTION WITH SAME-SEX VERSUS OPPOSITE-SEX FRIENDS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Charles Gore Jr.** 2011 | **Laura Wren** 2010 | **JoLynn Smith** 2012

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

We examined how men and women resolve conflict with their same-sex versus opposite-sex friends. Seventy-seven young adults were primed to think of their closest same sex friend and then asked to respond to a 'Conflict Resolution Scale' (Dowty, 2006) specifically in reference to that friendship. Participants were then primed to think of their closest opposite sex friend and responded to the same questions in reference to that friendship. Results revealed that men were more likely than women to use competing/arguing as a strategy for conflict resolution with their same sex and opposite sex friends. Men also were more likely to use avoiding as a strategy with their opposite sex friends; however, this finding did not apply to same sex friends. There were no gender differences for compromising, accommodating, and collaborating strategies. Compared to women, men were more satisfied with their opposite sex friendships. Compared to African Americans, Caucasians were more likely to use accommodating as a strategy with their same sex friends and with their opposite sex friends. Compared to Caucasians, African-Americans reported having more power in their opposite sex friendships. The more satisfied participants were with their opposite sex friends, the more likely they were to use an avoidant strategy with those friends. This finding did not hold true for same-sex friendships. The higher the participants'

self-esteem, the more likely they were to compete/argue their same-sex friends, the more likely they were to collaborate with their same-sex friends, and the more satisfied they were with their opposite-sex friends. In sum, these results suggest that men are more willing to adopt a confrontational style regardless of their friend's gender; however, with their female friends, a second strategy men preferred was to avoid conflict. Women were less confrontational, but did not choose to avoid conflict with their male friends. Ironically, conflict avoidance predicted satisfaction in opposite sex friendships. African-American participants responded with a pattern of more power and less accommodation in their friendships. Gender, race, self-esteem and attractiveness emerged as variables that influence conflict resolution in friendships. These findings may help us better understand the complex social dynamics underlying friendship.

#### **PERSONAL RESPONSIBILITY: RHETORIC OR REALITY?**

*South Carolina Political Science Association Annual Conference, March 2011*

**Student: Courtney Glenn** 2011

Faculty Mentors: Jennifer Disney, Ph.D., Adolphus Belk, Ph.D.  
Department of Political Science  
(PLSC 490 – Disney)

The purpose of social welfare has been increasingly contested since the dawn of the twentieth century. America is thought to be a place of infinite possibility for every individual, and subsequently, many believe that government assistance programs should be eliminated entirely. During the Clinton administration, a bipartisan attempt to drastically change public assistance was launched. This desire for change was caused by numerous factors, but ideological opposition was the major force. Myths of systemic abuse and sloth among aid recipients fueled the campaign for change and its supporters successfully redesigned public assistance in 1996 with the Personal Responsibility and Work Opportunity Reconciliation Act. It is my goal to explore the extent to which receipt of Temporary Assistance for Needy Families is connected to or disconnected from government dependency in the United States. This paper seeks to determine if PRWROA was more effective in establishing individual agency as it pertains to employment and self-sufficiency. In order to answer this question, I will use statistics from the Department of Health and Human Services, the Department of Labor, the Census Bureau and independent organizations to analyze levels of employment, exits from recipient rolls and post-program income in relation to cost of living. With this information success or failure will be measured by consistent positive or negative changes over time. In addition to providing statistical evidence for my claims, I will discuss the theoretical basis for terms such as “responsibility,” “opportunity” and “self-sufficiency” which have been largely influential in the rhetoric regarding the subject.

#### **DREAMS AND GOALS OF LOW-INCOME MOTHERS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Courtney Gregory** 2011 (McNair Scholar)

Faculty Mentor: Eurnestine Brown, Ph.D.  
Department of Psychology

The purpose of this current study was to examine data provided by a newly funded program in Early Head Start (EHS), which includes mothers living at or below poverty level guidelines. Participants were 12 women, including 11 mothers of children admitted to EHS, and one pregnant mother who hoped to gain EHS admission for her child. Eleven participants were African American and one was Caucasian. Data was gathered through the EHS Family Information Form, which included self-report information provided by the participants and data recorded during personal interviews with participants. We also used the BECK Depression Inventory. Analysis of the BECK revealed that 92% of the participants did not have signs of depression. We

asked mothers to describe their goals specifically for their children. All of the mothers listed “education” as a goal. Two mothers of male children included a desire to manage behavior as a secondary goal. Mothers also were asked to describe their dreams. Three parents, all at least 50% below the poverty level guidelines, provided no information. Two-thirds of those who answered wanted to pursue education and/or get a better job. Forty-four percent of mothers also mentioned education for their child as a dream. When asked to describe their strengths, two participants did not answer, sixty percent mentioned a supportive family, and forty percent mentioned something about their own parenting as their strength. Mothers were asked if they wanted to receive information about a range of issues. Only five mother requested information, and four were mothers of male children. The most popular requests were linked to finding a better job and managing their child's behavior. The least popular requests were linked to preventative health issues. In general, when asked to focus on goals for their children, all mothers wanted more education; however, when asked to focus on their dreams, most mothers answered in reference to themselves rather than their child and two did not respond. Mothers were also more likely to cite their families as their source of strength rather than something about themselves. These findings may be useful when designing interventions and/or support programs for low-income mothers and their children.

#### **AFRICAN-AMERICAN AND CAUCASIANS' SAME-RACE AND CROSS-RACE STEREOTYPES OF CRIMINALS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Crystal Tiedt** 2012 | **Kierra Landrum** 2012 | **Ashia Brown** 2012

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

We examined criminal stereotyping in today's young adults. Participants were 58 Caucasian and African-American adults. Participants were provided with three criminal scenarios (for crimes of stealing weapons, murder for prescription drugs, and a family murder-suicide) and asked to guess the race of the criminal and the punishment received. We also provided participants with three mug shots (an African-American, a Caucasian, and a Latino woman) and asked them to match the criminal with one of the following crimes: hit-and-run, neglect and murder, or hate crime. Participants were told that the study was testing their awareness of recent news reports in order to decrease social desirability in responding. Based on responses to the three mug shots, African-American participants heavily attributed murder to the Caucasian criminal, whereas Caucasian participants attributed murder to the African-American criminal. For the other crimes and pictures, cross-race blame did not emerge as clearly. African-American participants placed no blame on Caucasians for the hate crime (blaming African-Americans instead). Caucasian participants placed no blame on African-Americans for the hate crime (blaming Latinos instead). African-American participants blamed Latinos for the hit-and-run crime, while Caucasian participants placed fairly equal blame on all three races for the hit-and-run crime. Participants were also asked to guess the race of the criminal after providing them with the three crime scenarios (stealing weapons, murder for drugs, and murder-suicide). Our results revealed stereotypes, but not necessarily cross-race stereotypes. African-American and Caucasian participants assumed that African-American criminals were responsible for stealing weapons. African-American and Caucasian participants assumed that Caucasian criminals were responsible for murder to obtain prescription drugs and for the murder-suicide. We then compared participants who believed the criminal was the same race as them and participants who believed the criminal was a different race than them. Participants' ratings of punishment did not differ depending on whether they shared the race of the criminal or not. There were also no differences in the punishments given whether the criminal was believed to be African-American or Caucasian. In sum, our study revealed patterns of certain crimes being associated with certain races regardless of the race of the observer.

## TEACHING ROLE DICHOTOMY: SUPERHEROES AND THEIR SECRET IDENTITIES

*Presented at the 33rd Annual National Institute on the Teaching of Psychology,  
St. Pete Beach, Fla., January 2011*

**Student: Daniel Selvey** 2012 (McNair Scholar)

Faculty Mentor: Tracy Griggs, Ph.D.  
Department of Psychology

The purpose of this study was to create a media-oriented teaching strategy for work-nonwork conflict concepts and theories within an industrial/organizational psychology classroom. It is becoming increasingly important to integrate media into college classrooms in order to connect with students. Franzoni and Azzar (2009) found that, when combined with lecture-style teaching methods, the use of electronic media engaged students more readily, and helped them retain information far more efficiently than lecture alone. This study presents one possible venue in which film—one of the many types of electronic media—could be brought into the collegiate classroom to supplement learning. Films based on DC Comics and Marvel Comics were chosen due to the explicit nature of the work-nonwork conflict(s) presented therein. For example, Peter Parker/Spider-Man experiences conflict in an overt way in the Spider-Man films, making him an ideal model to be used in a classroom. The chosen group of protagonists exemplifies common aspects of work-nonwork conflict taught in I/O psychology classes, and an I/O psychologist with expertise in work-nonwork conflict was consulted to compile the list of concepts to be studied alongside the films. A student could be asked to review classroom material and then lead a discussion relating theory to the conflicts present in the life of a given hero (e.g., Superman, Batman). The next step for this study will be to, in conjunction with faculty at Winthrop University, apply it in a classroom setting to test its effectiveness. Future studies will extend both the concept list and the film sample to broaden applicability into other areas of psychology.

## HOMER AND VIRGIL REBORN: CATCH-22 AS A POSTMODERN EPIC

*Presented at the Sixth Annual Department of English Undergraduate/Graduate  
Research Conference, Winthrop University, March 2011*

**Student: Edward Szeman** 2012

Faculty Mentor: Leslie Bickford, Ph.D.  
Department of English  
(ENGL 300 – Bickford)

While studying Joseph Heller's *Catch-22* for Winthrop's English 300 and simultaneously working with Homer and Virgil's epics in English 208, with inspiration from critical articles by Julian Mitchell, Minna Doskow, Clinton Burhans Jr., I began to recognize many similarities between *Catch-22* and the ancient epics. Once I looked deeper, the similarities were too many and too important to overlook. My purpose for this paper is to prove, and am confident that I do so by its conclusion, that *Catch-22* fits the definition of an epic as set forth by William Harmon, Hugh Holman, and Northrop Frye while also utilizing characteristically postmodern techniques and components in its form and structure. Three of main elements of *Catch-22* on which I focus are the structuring of time, the divine presence, and the epic hero. Burhans' article, "Spindrift and the Sea: Structural Patterns and Unifying Elements in *Catch 22*," provides the groundwork for a comparison of the chronological structures of Heller's novel and the epics. I utilize Doskow's "The Night Journey in *Catch-22*" to support claims for several of the novel's officers as god-like figures. Finally, I draw from elements of Northrop Frye's "Anatomy of Criticism" to argue for the novel's protagonist, Captain Yossarian, as an epic hero.

## EXPRESSION, PURIFICATION AND CRYSTALLIZATION OF BINDING SITE MUTANTS OF BACILLUS SUBTILIS XYLANASE C

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

*Supported by a Winthrop University Research Council Grant*

**Student: Elizabeth Bales** 2012

Faculty Mentor: Jason Hurlbert, Ph.D.  
Department of Chemistry, Physics, and Geology

*Bacillus subtilis* xylanase C (BsXynC) catalyzes the hydrolysis of the xylan component of plant hemicellulose. Xylans are composed of  $\beta$ -1,4-linked xylopyranose units and are often decorated with other sugars such as L-arabinofuranose and glucuronopyranose that significantly limit enzymatic access to the xylopyranose backbone, thereby preventing degradation of the polymer. Previous work with BsXynC has revealed that the protein requires such substitutions for enzymatic catalysis, making it an ideal candidate for inclusion into the cadre of enzymes found within bacteria engineered to be biocatalytic agents for ethanol production. Analysis of the x-ray crystallographic structure of the enzyme has implicated tyrosine 231, serine 235, arginine 272 and tyrosine 274 in the binding of glucuronic acid substitutions found along the substrate. Based upon this observation, PCR mutagenesis was used to mutate each of these residues to alanine, thereby disrupting the hydrogen bonds between the binding residues and the substrate. In the present study, the mutated BsXynC isoforms were expressed, purified by metal chelating affinity chromatography and the optimal conditions for protein crystallization were determined. The purity of each preparation was determined by SDS-PAGE and MALDI-TOF mass spectrometry. Preparations demonstrating >90% homogeneity were concentrated and dialyzed into a low ionic strength buffer (20 mM HEPES pH 7.2) prior to crystallization trials. Using the crystallization conditions of the wild type protein as a base, crystallization conditions for the BsXynC mutants were explored by grid screening. Crystals of BsXynC S235A suitable for x-ray diffraction studies were grown in 0.25 M malonate, 0.25 M tartrate, 23% polyethylene glycol and pH 7.0. Crystals of Xylanase C Y274A suitable for x-ray diffraction studies were grown in 0.2 M malonate, 0.2 M tartrate, 23/25% polyethylene glycol and pH 6.0. Crystallization trials of the R272A and Y231A mutant proteins are continuing. Once conditions are identified for all 4 proteins, the crystals will be soaked with substrate analogs and reaction products prior to harvest and then subjected to x-ray diffraction analysis to determine the effect of the mutation. Identification of the residues responsible for the unique substrate requirements of this enzyme will enhance our understanding of this unique class of enzymes.

## OBSERVING THE DIURNAL CYCLE OF MITOSIS OF STEM CELLS PRESENT IN AEOLOSOMA

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Emily Bowie** 2012

Faculty Mentor: Julian Smith III, Ph.D.  
Department of Biology  
(BIOL 300 – Smith)

Numerous experiments have been conducted on the diurnal light variation and cellular response. Present conclusions on this topic are twofold. Cells appear to go into a "resting" period during the night after carrying out most of their aerobic activities during the day, suggesting that this "resting" period is linked to the cells regenerating. Also, in general, cellular processes, including the cell cycle, do respond to changes in light, especially with their mitotic cycles. I believe that the stem cells present in *Aeolosoma* will conduct mitosis more at night than during the day. *Aeolosoma* is a small annelid species that reproduces asexually in culture. *Aeolosoma* has proven useful in our lab for studying stem cells and the mitotic cycle. *Aeolosoma* were cultured under a clock-shifted photoperiod of 12L/12D; with artificial "noon" being around 5:00PM. After the *Aeolosoma* acclimated for



twelve days to their new diurnal rhythm, they were killed by freezing, which provided a way to preserve any cells currently undergoing mitoses at the time of death. One group was frozen at relative 3:00AM (dark group) and the second group was frozen at relative 3:00PM (light group). Mitotic cells were labeled with anti-phosH3, the nuclei of the cells were stained with Hoechst\_33342, and the cells undergoing mitosis were counted with a confocal microscope. Mitoses were 77% higher in the dark group. These results show that the stem cells are more likely to undergo mitosis at night than during the day. Future studies will include more samples at differing times to find the maximum time of mitosis, and the use of EdU labeling to observe S-phase.

#### **A PICTURE IS WORTH A THOUSAND WORDS OF FEEDBACK: VIDEOTAPING STUDENT PRESENTATIONS**

*Presented at the 33rd Annual National Institute on the Teaching of Psychology,  
St. Pete Beach, Fla., January 2011*

**Student: Erin Sim** 2012

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology

Oral presentation skills are valued in both college and the real world. Although many teachers include a public speaking component to their class requirements, they may be unaware of the additional benefits that can be achieved by videotaping oral presentations. This project evaluated a class exercise where students were videotaped during an oral presentation and then immediately afterward given the opportunity to watch sections of the videotape and discuss their performance. Assessment data revealed that the majority of students (74%) felt nervous about being videotaped and would not look forward to doing it again, especially introverts. However, most students reported learning something about themselves (95%) and feeling more confident about their speaking abilities (78%) after watching the video, especially students who had high sensitivity to criticism. Seventy-four percent of students felt the videotaping experience was better than they expected, and nobody thought it was worse than they expected. The more nervous students felt before the videotaping, the better they felt after watching themselves on video. Students were asked to identify their own strengths and weaknesses when watching the video. Introverts were more likely than extraverts to be unaware of their strengths prior to the exercise. Thirty-two percent of students reported being surprised by a weakness revealed on the video. Most students (63%) said they had come up with a strategy to overcome the weakness revealed on the video based on feedback from the teacher and their classmates. Taken together, these data indicate that this exercise might be worth the effort and may be particularly beneficial to students who dislike public speaking.

#### **QUALITY OF RELATIONSHIP PREDICTS ADULT CHILDREN'S POLITICAL SIMILARITY TO THEIR PARENTS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Erin Sim** 2012

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 471/472 – Sleight)

Eighty-six participants responded to questions that assessed their parental attachment, the political involvement of their parents, and items assessing similarity of political views. Participants whose political views matched their parents were more likely to trust their parents, feel that their parents understood them, report having higher self-esteem, and perceive their parents as being successful parents. Participants who agreed that their parents knew their political views were more comfortable talking about politics with their parents and were less ashamed when talking to their parents about their problems. We compared Democrat participants to Repub-

lican participants. Republicans were more likely to be politically similar to their parents, while Democrats reported having higher self-esteem. There were no differences between these two groups on their willingness to be honest or quality of relationship with their parents. We compared participants whose mothers were Republicans to participants whose mothers were Democrats. Participants with Democrat mothers reported being less angry with their parents and had higher self-esteem. In a similar comparison with fathers, participants with Democrat fathers reported that their parents were more likely to respect their feelings, they were more willing to seek out their parents' point of view, and they had higher self-esteem. Participants with Democrat fathers also reported that their parents helped them understand themselves better and rated their parents more frequently as people they were willing to be honest with. In sum, positive relationship qualities like trust and honesty emerged as predictors of political similarity between young adults and their parents. In other words, close relationships seem to enhance the transmission of political values. Republican young adults reported being more similar to their parents; however, participants with Democrat fathers characterized their parent-child relationships more positively. The political identity of the father appeared to exert a greater influence on young adults' perceptions than did the political identity of their mother. A better understanding of the effect that parental involvement has on young adults' political influences may be useful for encouraging increased participation in the electoral process.

#### **THE STATISTICAL ANALYSIS ON THE CHOREOGRAPHIC PROCESSES OF M.F.A. STUDENTS**

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual  
Research Symposium, Greensboro, N.C., January 2011*

**Student: Everett Johnson** 2012 (McNair Scholar)

Faculty Mentors: Cheryl Fortner-Wood, Ph.D., Karen Stock, Ph.D.  
Department of Psychology

What do the trends in the choreographing process indicate? Through an online survey that was distributed to institutions under the National Association Schools of Dance banner that provide M.F.A. degrees, a preliminary sample of 20 student choreographers was analyzed. The purpose of this research was to look at the numerical and statistical trends in the overall choreographic process; research thus far in choreography has a theoretical focus. It was hypothesized that Listening to Music was the most preferred choice of Inspiration Foundation at the beginning of this research. So far, the statistical trends show that Research on a Topic is most preferred, followed by Movement, and finally Literature. Sixty-six percent hold B.A. or B.F.A. degrees, eighty-seven percent have professional experience, and eighty percent of participants are over the age of 26. All student choreographers seek the opportunity of owning their own company. Most wish to teach at the collegiate level, work in their immediate community, and collaborate and commission works. Anticipated projects include exploiting current conventions of modern/contemporary dance, re-staging classical ballets with modern storylines and music, and incorporation of multimedia. Participants also commented on choreographers, past and present, that inspire them (Alvin Ailey, Isadora Duncan, Matthew Bourne, Bill T. Jones, and Jerome Bel, to name a few). Statistical trends will be revised and updated as more surveys are completed.

## THE CASKETS IN THE MERCHANT OF VENICE AS AN EVER-PRESENT THREAT OF CASTRATION

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Greg Larson** 2011

Faculty Mentor: Matthew Fike, Ph.D.  
Department of English  
(ENGL 305 –Fike)

Whereas previous critics of Shakespeare's *The Merchant of Venice* have considered the caskets and castration anxiety separately, this paper addresses both together in order to argue that the lead casket represents reproductive life, whereas the gold and silver caskets represent reproductive death. In short, the caskets are a projection of the suitors' castration anxiety. Freud's "Inhibitions, Symptoms and Anxiety" suggests that a son's fondness for his mother eventually yields to fear of castration by the father. In a contrasting way, the suitors, as potential fathers, feel castration anxiety because, if they choose the wrong casket, they will forfeit the chance to beget an heir. Moreover, Shakespeare's references to gold and their association with reproductive death are especially relevant to castration. Portia's "snaky golden locks" (3.2.92), as James Stone suggests, allude to the petrifying effect of viewing Medusa's snaky head. Similarly, Freud considers the fear of being petrified as a metaphor for castration. As well, Morocco's discovery of a skull in the golden casket reinforces the emphasis on reproductive death. Shakespeare thus presents strong evidence that the gold and silver caskets represent the suitors' castration anxiety. Ultimately, then, the paper adds an overlooked Oedipal dimension to Freud's view in "The Theme of the Three Caskets" that the caskets represent the female types encountered in the course of a man's life.

## HEMISPHERIC DOMINANCE AND LEADERSHIP

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Heather Ernst** 2011

Faculty Mentor: Darren Ritzer, Ph.D.  
Department of Psychology  
(PSYC 471/472 – Ritzer)

Most introductory psychology textbooks outline specific abilities that are predominantly controlled by either the right or left hemisphere. For example, language, logical and literal thinking reside in the left hemisphere while creativity and holistic thinking are right brain phenomena. People can favor one hemisphere over another, or rely on both equally. For example, right brained individuals tend to be more creative and emotionally sensitive. Right brained college students favor majors such as advertising, journalism, art, English, music, oral communications, interior design and architecture, whereas left brained dominate individuals chose majors such as business, criminal justice, accounting, finance, and mathematics/computer science. The vocational choices of left hemisphere and right hemisphere individuals suggest that those who are left hemisphere dominant might be stronger leaders than those individuals that are right brained. This research was designed to see if there was a relationship between hemisphere dominance and leadership ability. We hypothesized that left hemisphere dominant individuals would show stronger tendencies towards strong leadership and right hemisphere dominant individuals would display weak leadership tendencies. Ninety undergraduates completed hemispheric dominance and leadership scales. Results revealed that right and left brained individuals did not differ in their strong leadership scores or in their weak leadership scores. Similarly, we found gender differences in leadership scores. Additional results showed that psychology majors, compared to other majors, were less likely to categorize themselves as weak leaders. There were no differences between majors in relation to strong leadership. Although our hypothesis was not supported, the data showed a trend in that direction, arguing for further exploration.

## THE ROAD TO ECONOMIC PROSPERITY

*Presented at the 40th Annual Meeting of the North Carolina Political Science Association, Charlotte, N.C., February 2011*

**Student: Hector Espinal**

Faculty Mentor: Dr. Jennifer Disney, Ph.D.  
Department of Political Science

The Road to Economic Prosperity provides a strategy for the transformation of a country with low economic growth and negative balance of payments into one with a highly developed economy and positive current account balance. These improvements will enhance the country's standard of living, promote "sustainable development" and reduce its "population below poverty line" metric. Because every country's situation is unique, the paper describes an implementation plan for the Dominican Republic, the Caribbean country where Christopher Columbus first landed on his voyage in 1492. The country's economic problems are found to be centered on the fact that imports are substantially larger than exports (in dollars) and thus the country is experiencing negative balance of payments, increasing foreign debt and related currency devaluations. The paper is divided into three supporting phases: Economic Infrastructure, Educational Partnership and Effective Governance. For each phase, specific recommendations applicable to the Dominican Republic are provided, and conceptually a similar approach could be adopted for any country experiencing low economic growth and relatively high level of poverty in its population.

## SHAKESPEARE'S USE OF HOMOEROTICISM IN AS YOU LIKE IT

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April, 2011*

**Student: Jade Stuckey** 2011

Faculty Mentor: Matthew Fike, Ph.D.  
Department of English  
(ENGL 305 – Fike)

The purpose of this paper is to investigate the homoerotic nature of Orlando and Rosalind/Ganymede's relationship in Shakespeare's *As You Like It* and to suggest that their sexual tension is a necessary prerequisite for their love to mature and succeed. The present study advances the inquiry into cross-dressing by critics such as Stephen Lynch and Jay Halio by investigating its implications for the theme of love and for the meaning of the play's title. Given the original all-male cast, then, audience and characters alike are encouraged to "feed [themselves] with questioning" of their own sexual natures. Ultimately Orlando and Rosalind, the only couple who fully explore their sexualities and achieve a balanced representation of love, emerge as a model for us all.

## PUBLIC PROFESSOR ASSESSMENTS: EXPLORING THE VALIDITY OF COMMENTS ON RATE MY PROFESSORS.COM

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: James Graham** 2011 | **Jessie Bickley** | **Carmen Daggerhart** | **La'Kee Dawkins** | **Sydney Hendrix**  
**Rachel Hooper** 2011 | **Felicia Taylor** 2010 | **Cliff Totherow**

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

The hypotheses for the study were that student participants will indicate that comments relate to different qualities of teaching: clarity, helpfulness, easiness, grades, and overall quality, and student participants will

indicate that comments will differ in strength. We tested these hypotheses by giving a survey consisting of 150 comments made by students on the website, ratemyprofessors.com. The participants were asked to select what type of comment was made and also rate the strength of the comment.

#### **THE ROLE OF PI3K/AKT SIGNALING IN THE DEVELOPMENT OF CIONA INTESTINALIS**

*Presented at the Undergraduate Seminar in Biology at Winthrop University, December 2010, The Winthrop University Department of Biology Poster Competition, December 2010, and The Summer Undergraduate Research Fair at Winthrop University, 2010*

*Supported by a National Heart, Lung, and Blood Institute Grant from NIH*

*Received the Houk Prize Undergraduate Research Award in Biology*

**Student: James Tucker** 2011

Faculty Mentor: Heather Evans-Anderson, Ph.D.

Department of Biology  
(BIOL 472 - Evans-Anderson)

Ciona intestinalis is an invertebrate animal model system that provides many advantages in the study of heart development due to the relatively simple heart design, reduced genetic redundancy, and the possession of numerous genes homologous to those found in vertebrates. Cardiac myocytes in Ciona are reported to have the ability to regenerate new cells in order to replace old or damaged cells throughout the lifespan of the adult Ciona, an ability which does not occur in postnatal mammals. In vertebrates, the regulation of cardiac myocyte proliferation has been attributed to FOXO transcription factors, which are mediated by PI3K/AKT signaling. The aim of this study was to identify the effects of altered PI3K/AKT signaling on heart development and regeneration in Ciona. The hypothesis is that inhibition of the PI3K/AKT signaling pathway will result in disrupted heart formation as well as a reduction in the regenerative ability of cardiac myocytes in adult Ciona hearts. In order to determine the developmental impact of altered PI3K/AKT signaling, Ciona larvae were generated via timed in vitro fertilization of gametes and then treated with drugs to specifically alter PI3K/AKT signaling. The inhibitors used were LY294002 (Sigma), a PI3K-specific inhibitor, and an AKT kinase inhibitor (Invitrogen). Ciona larvae were treated for 48 hours to encompass the period of morphogenesis, during which the heart is formed. Resulting juveniles were assayed. Preliminary results show altered morphogenesis and increased morbidity in Ciona juveniles treated with the PI3K-specific inhibitor compared to those treated with the AKT-specific inhibitor and non-treated controls. Future directions include the use of real time RT-PCR to assay FOXO transcriptional activity and the utilization of immunohistochemistry to detect proliferation and apoptosis rates in treated specimen.

#### **OTAKUS VERSUS COLLEGE STUDENTS ON LITERARY HABITS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

*Received the Psi Chi Regional Research Award*

**Student: Jasmin Sanders** 2012

Faculty Mentor: Kelly James, Ph.D.

Department of Sociology and Anthropology

Originating from Japan, manga are graphic novels with detailed plots, in-depth characterization, and a unique style of comic etiquette. People who regularly engage in reading manga are called otakus. For Western readers, reading manga requires their full attention because manga structure is different from that of a novel. For example, manga are read from right to left. This includes the page order as well as the dialogue on each page. Because Western students are not used to this reading order or the non-linear reading style, they have to think

more critically while they read. Previous research found that middle school students who were assigned to read manga showed increased motivation to read and better understanding of the writing process (Crilley, 2009; Seyfried, 2005). The purpose of our study was to compare the reading habits of otakus to other young adults. We hypothesized that otakus would read more literature for pleasure and of a greater variety than college students who do not read manga. Participants were 60 young adults, 35 college students recruited from an anime convention (otakus) and 25 recruited from college classrooms (college students). Participants responded to a survey to assess the quantity and variety of their reading, as well as their motivation to read. Results revealed that otakus read significantly more novels monthly than college students,  $\chi^2(1, 57) = 15.46, p < .001$ . Thirty-two of the 35 otakus reported reading novels and other forms of literature for enjoyment, while the rest focused on mangas only. In contrast, only 11 of the 25 college students reported reading novels, the remaining 14 reported reading nothing outside of school. All otakus said in the survey that they would read more if they could, while less than half (11) of the college students sample said the same. The results support our hypothesis that otakus enjoy reading, read more, and are more willing to read than college students. This study, combined with previous research might indicate that encouraging students to read manga could have a positive effect on their literary habits both in and outside of school.

#### **THE POWER OF A FOLK TALE IN A POLITICAL SETTING: THE APPLICABILITY OF V FOR VENDETTA IN A RHETORICAL SITUATION**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Jessica Barber** 2012

Faculty Mentor: Jane Smith, Ph.D.

Department of English  
(WRIT 300 – Smith)

In this paper, I examine a speech given by the character V in V for Vendetta, directed by James McTeigue, through the lens of research done by Terrel Young, et al, and Roderick P. Hart and Suxanne M. Daughton in rhetoric power. This speech is unique to the movie because it is much more simplistic, yet more effective, than the sophisticated and verbose speech given by V earlier in the movie; I sought to answer why simplicity and effectiveness coincide here. I found that V structures the simpler speech as a folk tale, thereby creating an understandable message for the common man and allowing for the speech to retain its rhetorical power through characteristics such as disarming the audience, creating simplistic characters, and maintaining brevity. This research is applicable to any rhetorical situation because it provides insight into how speakers can simplify a complex message and extend the rhetorical power and influence of their work, making a lasting change in the minds of their audience members.

#### **COUGHING, SNEEZING, OR SIGHING, HE'S STILL 'THE WILD W': A MARXIST CRITIQUE OF USER-GENERATED CONTENT ON PUNDITKITCHEN.COM**

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Jessica Barber** 2012

Faculty Mentor: Jane Smith, Ph.D.

Department of English  
(WRIT 300 – Smith)

The Internet has opened many doors to different forms of expression, most notably websites that allow for user-generated content. One such site is Punditkitchen.com, a member of the Icanhascheezburger family of sites. But these questions remain: what does this democratization of news and information do to the ideology

of a nation? And, if the user-generated content impacts the ideology, does it set up a meaningful conversation? I will answer these questions and more in “Coughing, Sneezing, or Sighing, He’s Still ‘The Wild W’: A Marxist Critique of User-Generated Content on Punditkitchen.com.” I applied these questions to a user-generated artifact called “The Wild W” in light of Jane Singer and Ian Ashman’s along with Stephen A. Banning and Susan Billingsley’s work. My methods included examining the visual as well as textual elements present in the artifact. My conclusions are that HipHopSoccer, the generator of “The Wild W,” intends for the artifact to be a Marxist critique of the president, separating him from the press. HipHopSoccer tries to use animal imagery to lower former president George W. Bush, but the very act of playing on a “photo-op” kind of environment reduces what impact that critique could have had; the user simply adds to the zoo-like chaos and facetiousness that he or she is trying to ridicule. If the democratization of the news is to have any meaningful impact, the relationship between politics, news, the press, and the Internet needs to be examined in a more serious environment.

#### **RETHINKING GENDER: H. D.’S TRANSFORMATION OF FEMALE ARCHETYPES**

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Joanna Tepper** 2012

Faculty Mentor: Leslie Bickford, Ph.D.  
Department of English  
(ENGL 504 - Bickford)

Throughout H. D.’s poetry, she addresses the traditional role of women in society. In poems such as “Mid-Day,” “Oread,” “The Pool,” and “Helen,” H. D. presents female characteristics as inferior in order to bring about a change that takes place in poems such as “Sea Rose” and “Tribute to the Angels.” H. D.’s Imagist background allows her to transform the reader’s ideas about these female symbols and rewrite them into female archetypes of power through descriptive imagery. Susan Friedman, in her book *Psyche Reborn: The Emergence of H.D.*, discusses the masculine and feminine characteristics given to nature to demonstrate the submissive role of women. Female figures attempting to step out of their given roles are seen in poems such as “The Pool” and “Helen,” but these figures are either covered up or reduced to ashes for doing so. H. D. also addresses stereotypical female symbols by transforming them in many of the poems from her book *Sea Garden*, including a series of poems about different sea flowers. The imagery of the flowers goes from images of fragility into those of strength and the ability to weather the harshest elements. As another image transformed, the Virgin Mary was typically seen as the ideally submissive woman, but H. D. presents the reader with an image of the Virgin Mary as the exact opposite of how society wants to portray her. H. D. takes typical female symbols such as the rose, Helen of Troy, and the Virgin Mary, and attempts to turn them into archetypes of female power, setting herself apart from fellow Imagist poets of her time period while at the same time continuing to follow fellow Imagist Ezra Pound’s slogan “make it new.”

#### **EDUCATION CONTINUATION AFTER UNDERGRADUATE STUDY**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Students: Joelle Shipp** 2013 | **Shaniqua Chinnis** 2013

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

The present study examined the different factors that motivate students from single-parent homes and students from two-parent homes to continue their education after undergraduate study. These factors included financial aid, grades, the location of the university or program, and the type of program that would be most likely at-

tended by the students. One hundred and thirty-two Winthrop University students completed a questionnaire that assessed degree completion, future plans, and education continuation as well as demographic information on family composition and socioeconomic status. While there were no overall differences between students from single-parent homes and two-parent homes in education continuation, there were differences in specific types of post-baccalaureate programs. Graduate school and Masters programs were ranked as the most likely attended programs among both groups of students. Medical school and law school were ranked significantly higher by students from single-parent homes than those from two-parent homes. Medical school and law school were also more likely to be attended by students whose parents had obtained a high school diploma or less. Receiving more money as a reason to continue education was a big factor among single-parent and two-parent homes students. The family income of single-parent home students and two-parent home students also differed significantly with two-parent home families having a higher income than single-parent families. The findings indicate that students from single-parent homes may favor higher socioeconomic post-baccalaureate programs.

#### **IDENTIFICATION OF A HEART SPECIFIC CIS-REGULATORY REGION IN CIONA INTESTINALIS**

*Presented at the South Carolina Academy of Science Conference, April 2011*  
*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student: John Samies** 2011

Faculty Mentor: Heather Evans-Anderson, Ph.D.  
Department of Biology

DNA-binding transcription regulators function as interpreters of the genome’s regulatory code by binding to specialized regions of DNA called promoters. Since gene expression is dependent on specific promoter regions, properly identifying the sequence and size of the promoter region is necessary when trying to elucidate tissue-specific gene expression patterns. Here we seek to identify the cis-regulatory region of a known heart specific gene in *Ciona intestinalis* (Aniseed database ci0100139114). As a urochordate, *Ciona intestinalis* is a primitive chordate ancestor to vertebrates and provides an intriguing animal model system to study the conserved regulatory mechanisms that direct heart development. Morphogenesis of the *Ciona* heart is very similar to early vertebrate heart development presumably due to conserved, regulatory genetic programs. Once identified the heart specific promoter will be cloned into a vector that encodes for a fluorescent fusion protein (TdtTomato, Invitrogen). The resulting construct will be a useful tool for further analyses. Specifically, this construct will be electroporated into *Ciona* embryos to generate a fluorescently-defined heart so that we can make morphometric measurements during heart development.

#### **CARDIAC MYOCYTE PROLIFERATION ASSAY IN CIONA INTESTINALIS**

*Presented at the South Carolina Academy of Science Conference, April 2011*  
*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student: John Samies** 2011

Faculty Mentor: Heather Evans-Anderson, Ph.D.  
Department of Biology

Cardiac myocytes in *Ciona intestinalis* are reported to have the ability to regenerate new cells in order to replace old or damaged cells throughout the lifespan, an ability which does not occur in postnatal mammals. However, regeneration of cardiac myocytes in *Ciona* has not been verified using modern techniques. Here, we have developed an assay to identify proliferating cardiac myocytes in the myocardium of *Ciona*. This assay is critical in order to definitively demonstrate the validity of our regeneration model that we are developing for

related studies. In order to assay proliferating cardiac myocytes, whole-mount and section immunohistochemistry using proliferation markers phosphohistone H3 (PHH3), BrdU, and EdU along with sarcomeric muscle marker MF20 were used to identify regions of cardiac myocyte proliferation and to determine the baseline rate of proliferation in the Ciona. Myocardial regeneration was stimulated by subjecting adult Ciona hearts to cryo-injury. Injured hearts were incubated for 24 and 48 hours and then assayed for cardiac myocyte proliferation. Preliminary data show distinct regions of proliferation in the differentiated cardiac myocytes of the myocardium. Furthermore, TEM analysis was used to examine alterations in ultrastructure in injured versus control hearts; however, we are still waiting for these results.

#### **GENETIC VARIABILITY IN THE INFLUENZA A H5N1 HEMAGGLUTININ PROTEIN IN EGYPTIAN HUMAN AND AVIAN HOSTS**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH and a Winthrop University Research Council Grant.*

**Student: Jordan Green** 2011

Faculty Mentor: Kristi Westover, Ph.D.  
Department of Biology

Influenza A H5N1, more commonly known as bird flu, is one of the deadliest viruses under surveillance by the World Health Organization (WHO). Since 2003, H5N1 has infected 518 humans, killing 308 (59.5% mortality rate). The primary animal host is avian, and though most cases in humans occur from dealing with infected birds, human to human transfer poses the greatest potential pandemic risk to human populations. Recently there have been large numbers of documented human infections of H5N1 in Egypt (121 cases with 40 fatalities; 30% mortality). We collected all available (375) influenza A H5N1 hemagglutinin (HA) nucleotide sequences from Egyptian avian and human hosts to examine phylogenetic relationships among the strains. Complete sequences were aligned at the amino acid level and phylogenetic trees have to date been generated by the maximum parsimony (MP), maximum likelihood (ML), minimum evolution (ME), and neighbor-joining (NJ) methods using the uncorrected proportion of amino acid differences (p). Our results indicate that all one chicken sequence is basal to a clade containing all Egyptian human sequences (bootstrap = 97%). Further work will be completed to examine mutations in hemagglutinin antigenic regions to identify the nucleotide changes associated with the transmission of avian flu to humans in Egypt.

#### **THE EFFECT OF JOINT PET OWNERSHIP ON RELATIONSHIP SATISFACTION AND STRESS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*  
*Jordan McElroy received a Psi Chi Travel Award*

**Students: Jordan McElroy** 2012 | **Courtney Gregory** 2011 | **Jenny Mead** 2010

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

We examined the impact of joint pet ownership on satisfaction and stress in young adults' relationships. Seventy-three participants responded to a survey that assessed their current living situation, pet ownership, pet attachment, stress levels, and relationship satisfaction. Participants were asked specifically about joint pet ownership, which could include joint ownership of a pet with roommates, significant others, or family members. We compared participants who reported jointly owning a pet with another person with participants who had no joint pet ownership. Participants with pets reported greater relationship satisfaction than participants in re-

lationships who had no pets. These two groups did not differ on self-esteem or stress levels. We compared men and women who jointly owned a pet with a partner. Women were more likely than men to agree that the pet was like a child to them, and that they agreed with their partner about how to raise the pet. The two genders held similar views about how much financial stress and arguments their pet caused, as well as how much the pet brought them together and how much they discussed the pet. We divided participants with pets based on pet ownership: participants who felt primary ownership of the pet, participants who felt their partner owned the pet (typically because the partner had owned the pet prior to the start of the relationship), and participants who felt that they and their partner had equal ownership. Participants who felt that their partner owned the pet were less likely to see the pet as a child, were less likely to agree that the pet brought them closer together, and were more likely to agree that the pet had caused stress. The higher the pet attachment, the more participants agreed that the pet brought them closer; however, pet attachment and relationship satisfaction were not significantly correlated. Agreeing that the pet had brought them closer together related to feeling more jealousy about their partner's feelings for the pet. These findings reveal that pet ownership can enhance individuals' relationship satisfaction, not just their life satisfaction as had been demonstrated in previous studies.

#### **KATAPLANA CELERTRIX n. sp. (TURBELLARIA: OTOPLANIDAE) FROM THE EASTERN COASTLINE OF NORTH CAROLINA, USA AND THE UTILITY OF CONFOCAL MICROSCOPY IN SPECIES DESCRIPTIONS**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Joseph Burse** 2011

Faculty Mentor: Julian Smith III, Ph.D.  
Department of Biology  
(BIOL 471 – Smith)

Kataplana celeretrix is a new species of turbellarian belonging to the family Otoplanidae. This species was abundantly found in sediments taken from the shoreline of Emerald Isle Beach, North Carolina. The use of confocal laser scanning microscopy (CLSM) in the identification of this organism provided a unique view of the external and internal anatomy. Specimens were stained for DNA (Hoechst 33342), muscle (Alexa488/phalloidin), sensory and motile cilia (anti-acetylated Tubulin) and dividing cells (anti-phospho Histone 3) which gave unmatched visualizations of morphological features. CLSM proved to be a remarkable complement to traditional methods. K. celeretrix fits neatly into Kataplana due to morphological similarities to other species in this genus; however it differs from members of its genus largely due to similarities to Kata of the subfamily Otoplaninae and may be a bridge between the genera Kataplana and Kata. This suggestion is backed by previous molecular study which showed some errors to be present in the classification of the Family Otoplanidae. Members of both genera are now known to have sehkolben, a bivaginate species, possible lack of kittdrusen, and cylindrical pharynges ciliated on the inner and outer sides.

#### **YOUNG ADULTS' PERCEPTIONS OF TRADITIONAL AND NON-TRADITIONAL PARENTING SITUATIONS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Katheryn Dixson** 2012 | **Chauntice Buck** 2013

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

The purpose of our study was to examine young adults' perceptions of different parenting situations. We hypothesized that participants would react most positively to a traditional parenting situation that included

a mother and a father in the home. Sixty-five adults were randomly assigned to one of three conditions: traditional parents, single mother, or grandparents. Participants began by reading a paragraph-long parenting scenario that included two children and a mixture of healthy (e.g., lots of love) and poor (e.g., hot temper) parenting strategies. The scenarios were identical except 1/3 of the participants read that the caretakers in the scenario were a mother and father, 1/3 read about a single mother, and the remainder read about grandparents. After reading their scenario, participants responded to a survey that assessed their perceptions of the parenting, their own childhood experiences, and demographics. Results revealed no significant differences in perceptions of parenting across the groups with one exception; participants who read the single mother scenario were more likely to agree that the children were obviously loved than did participants who read the mom-dad scenario. The more positively participants perceived a parenting scenario, the more they agreed that the children were obviously loved. Also, the happier participants were with the home in which they were raised, the more likely they were to see love between the caretaker and children in the parenting scenario they read. The more participants were satisfied with how they were raised: the more they agreed that both of their parents were actively engaged, the more they agreed that they had strong family support, and the more they agreed that they plan to raise their children in the way that they were raised. In sum, our hypothesis was not supported. Young adults' held similarly positive perceptions across different family structures, perhaps as a result of non-traditional families becoming more commonplace in today's society. Love emerged as a more important variable than family structure. Although young adults' perceptions of the parenting situations were similar, young adults were more satisfied with their own upbringing if they were raised in a traditional, two-parent household.

#### **ADULTS' MATERIALISM, ENTITLEMENT, AND ATTITUDE TOWARD CHARITABLE GIVING**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Katie Boseman 2012 | Amanda Patterson 2012**

Faculty Mentor: Merry Sleigh, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleigh)

We examined young adults' attitudes toward charitable giving along with their materialism and sense of entitlement, two variables that had not been previously examined. Sixty young adults first were presented with a scenario giving them responsibility for distributing \$500 among four charities: a US charity focused on providing food (US-Food), a Tanzanian charity focused on providing food (TZ-Food), a US charity focused on medical assistance (US-Medical), and a Nicaraguan charity focused on medical assistance (NG-Medical). Participants then responded to a survey. Results revealed that US-Food received the highest donation, followed by US-Medical, TZ-Food, and NG-Medical. The more participants gave to US-Food, the less money their family had growing up and the younger the participant was. The more participants gave to NG-Medical, the more money their parents had given to charity when they were growing up and the older they were. The higher the entitlement score, the less participants reported having given to charities in the past, and yet the more they perceived themselves to be a generous person. The more entitled participants were, the higher their materialism score. Materialism and entitlement did not predict to which charity participants would donate, and materialism was not related to past charitable behaviors. Psychology/social work majors gave more money to US-Food than did other majors. In contrast, psychology/social work majors gave less money to TZ-Food than did other majors. These groups did not differ on other variables. Women were more likely than men to donate to US-Food, but there were no other gender differences. In addition, there were no differences in giving based on political affiliation or experience with study abroad. The more participants reported donating to charities in the past, the more religious they were and the more their parents gave to charity. In sum, these findings suggest that young adults in the US, and in particular psychology/ social work majors, were most likely to support US-based charities. Religion and parental modeling emerged as more influential variables related to charitable giving than did gender, sense of entitlement, materialism, political affiliation or study abroad experience.

#### **EFFECT OF POSITIVE REFRAMING ON NEGATIVE FAMILY, RELATIONSHIP AND SCHOOL RELATED EVENTS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011 and the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

*Received a Psi Chi Regional Research Award*

**Students: Katie Messier 2011 | Kristin Smoak 2011**

Faculty Mentor: Merry Sleigh, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleigh)

Positive reframing is the process of changing the view or emotional conception of an experience, and to place it in a positive frame in order to change the entire meaning of the original experience (Kraft, Claiborn & Dowd, 1985). Although this strategy has much theoretical support, the empirical evidence regarding its effectiveness is more limited. We experimentally examined the effect of positive reframing of a negative event on subsequent mood. Participants (n = 85) were first asked to spend three minutes writing a story about a negative event in their past. Participants were randomly divided into one of three conditions. One third of participants were asked to focus on a negative event related to their family, 1/3 were asked to focus on a school-related event, and the remaining participants were asked to focus on a romantic relationship event. After writing for three minutes, participants completed the PANAS (Clark & Watson, 1988) to assess their mood. Participants were then instructed to write about the same negative event for three minutes but this time to frame it in a positive light, emphasizing positive aspects or outcomes related to the event. After the positive reframing exercise, participants completed the PANAS for a second time. Results revealed that participants' mood improved following the positive reframing exercise, but the extent of improvement did not depend on the specific focus of their story. Young adults with strong self-esteem and who spend time reflecting on past events especially benefitted from this technique. In contrast, race, gender, year in school, grade point average, self-assessment as a good storyteller, flexibility in emotions, self-control over emotions, and age did not predict the degree of mood change. These findings provide experimental evidence to support the theoretical argument that positive reframing can be an effective strategy to improve mood and that this strategy appears to be equally effective across different types of negative past events (family, school, and relationship) and across different types of people.

#### **OVERCOMING FIRST WORLD DOMINATION: VENEZUELA AND EL BANCO DEL SUR**

*Presented at the 40th Annual North Carolina Political Science Association Meeting, Charlotte, N.C., February 2011*

**Student: Katrina Jorsch 2011**

Faculty Mentor: Jennifer Disney, Ph.D.  
Department of Political Science  
(PSLC 506 – Disney)

The First World has maintained much control over the economic development of other countries in the world, especially with the establishment of such organizations as the International Monetary Fund and World Bank. Regions comprised of developing nations are finally recognizing the problems with this situation and are coming together to take a stand. This paper looks at a case study of Venezuela and discusses the economic changes the country has experienced and the interactions the country has had with international financial institutions. After explaining these shifts, the recent stand against neoliberal development ideology - the "Bank of the South" or Banco del Sur - is discussed and described in order to analyze both the discontent of developing regions and the possibility of alternative development solutions.

## DESIGN AND SYNTHESIS OF ZONE 4 MODIFIED SPHINGOSINE KINASE INHIBITORS

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH and a Winthrop Research Council Grant*

**Student: Kevin Mays** 2012

Faculty Mentor: T. Christian Grattan, Ph.D.

Department of Chemistry, Physics, and Geology

Sphingolipids have historically been known as key components of cellular rigidity and cytoplasmic functionality; recently, however, several sphingolipid derivatives have been characterized as dual structural components and intracellular messengers. Of particular interest are sphingosine-1-phosphate (S1P), an oncogenic and carcinogenic stress-mediated growth factor, and ceramide, a sphingosine derivative believed to mediate apoptotic processes. The phosphorylation of ceramide into S1P is catalyzed by the enzymes Sphingosine Kinase I and II (SPK1/2); the inhibition of this activity has been demonstrated to slow carcinogenesis, metastasis and angiogenesis in cancerous tissues. A number of novel SPK1/2 inhibitors have been identified by Smith et al and show promising anticancer effects in vitro (below); this project specifically focused on the characterization, design and synthesis of inhibitor derivatives to facilitate their production and improve upon their purities. Through synthetic modification of zone 4, we have begun to assess not only the pharmacophoric nature of this zone to the inhibitory effectiveness as well as the oral bioavailability of the derivatives themselves.

## MALVOLIO'S ENANTIODROMIA AND PURITANISM IN SHAKESPEARE'S TWELFTH NIGHT

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Kevin Pope** 2013

Faculty Mentor: Matthew Fike, Ph.D.

Department of English

The paper examines Malvolio from Shakespeare's *Twelfth Night* as a vehicle for anti-Puritan satire. Whereas previous critics like J. L. Simmons and Maurice Hunt assert that the character either is or is not a Puritan, the present study considers such a binary to be moot: Malvolio, whether a Puritan or not, satirically represents Puritanism. Instead, Malvolio's journey through the play is considered from a Jungian psychological perspective. Whereas his encounter with the fool Feste leads to enantiiodromia (a transformation into the opposite), his failure to achieve a proper coniunctio (integration) makes him a satire on Elizabethan Puritanism. This enantiiodromia is a three-stage process consisting of a swing from precision to passion, a sartorial augmentation (his dressing in colorful cross-garters), and a swing back toward rationality in the scene with Feste disguised as Sir Topas. Ultimately, Malvolio's final words, "I'll be revenged on the whole pack of you," illustrate the failure to achieve coniunctio and, as Russ McDonald observes, eerily foreshadow the Puritans' role in the English Civil War in the 1640s.

## EXAMINING COLLEGE STUDENT HOOK UPS USING A SCRIPT ANALYSIS APPROACH

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Students: Kiaira Davis**, 2014 | **Ashley Garrick**, 2011 | **Kenyatta Jeter**, 2011 | **Ashley McKnight**, 2011 | **Megan Morris**, 2011 | **Deonta' Palmer**, 2014 | **Brooke Perry**, 2011 | **Nichole Shelly**, 2015

Faculty Mentor: Tracy Griggs, Ph.D.

Department of Psychology

Recently on college campuses traditional dating has been largely replaced by what is termed, "hooking up." Hooking up, which is a type of one-night stand (Boswell & Spade, 1996; Paul, McManus, & Hayes, 2000),

involves a woman and a man who are casual acquaintances, or who have just met that evening, deciding to engage in sexual behaviors for which there will likely be no future commitment. The couple usually does not communicate about what sexual behaviors they will or will not engage, and frequently both parties have been drinking alcohol prior to hooking up (Paul et al., 2000). While several studies document this behavior, few studies have taken a qualitative approach to understanding the social correlates of hooking up behavior, and in particular, the ways that partners communicate their limits during a hookup. 127 female and 29 males participated by answering both closed- and open-ended survey questions related to their own hooking up experiences. Each participant wrote a script describing a "typical hookup." Scripts were analyzed by two raters and coded for factors such as the relationship between partners, the intentionality of the hookup, the setting, the presence or implied use of alcohol or drugs, the sexual activities included in the hookup, reasons expressed for hooking up, how limits are communicated during a hookup, and descriptions of what makes a bad hookup. With the rise in the number of acquaintance rapes on college campus in recent decades, this study has implications for awareness and education campaigns regarding college sexual assaults.

## CONFIDENCE IN THE SOURCE: WHO DO STUDENTS WANT TO LEARN FROM?

*Presented at the 33rd Annual National Institute on the Teaching of Psychology, St. Pete Beach, Fla., January 2011*

**Student: Krysten Sobus** 2011 (McNair Scholar)

Faculty Mentor: Merry Sleight, Ph.D.

Department of Psychology

The current project examined students' confidence in different sources of information in the college classroom. Young adults, surveyed online, were told to imagine that they were signing up for college classes. For several psychology classes, they were offered a short description of professors with varied qualifications and asked to rank them from most to least preferred. Results revealed that in some cases, professors that were most popular with students were not necessarily the ones who were most successful in the field. For example, students preferred a developmental psychologist who had children over one with a highly respected animal research program in development, and preferred to be taught I/O by a social psychologist rather than by an I/O psychologist who worked as a consultant. Participants were then asked to rank sources as those they were most to least willing to teach them about psychological disorders. Students preferred to learn from professional sources rather than from people who had experienced a psychological disorder, and in general, believed that they already knew more about psychological disorders than the average person. The more students felt they already knew about psychological disorders, the less interested they were in learning about disorders from a personal perspective. Ironically, students who had taken Abnormal Psychology and listened to personal experiences selected words such as "informational, inspiring, interesting" to describe them and were more aware that individuals with psychological disorders experience stigma. These findings suggest that students may have a unique and often contradictory perception of "reliable sources," an insight that may help teachers better understand the way that students receive information presented in the classroom.

## A CLASS STIGMA EXERCISE FOR ABNORMAL PSYCHOLOGY: DOES AN ASSIGNED DIAGNOSIS INCREASE EMPATHY?

*Presented at the 33rd Annual National Institute on the Teaching of Psychology, St. Pete Beach, Fla., January 2011*

**Student: Krysten Sobus** 2011 (McNair Scholar)

Faculty Mentor: Merry Sleight, Ph.D.

Department of Psychology

Previous research has clearly established that stigma exists for individuals with psychological disorders (e.g., Dannette, 2008; Klein, 2008; Lundberg, 2009). Abnormal psychology teachers have a responsibility to discuss

and reduce stigma. Our project was to evaluate a class exercise intended to increase understanding and knowledge of psychological disorders. Young adults (n = 125) participated in this simulated classroom exercise via [www.surveymonkey.com](http://www.surveymonkey.com). Each person was randomly assigned to one condition: schizophrenia, bipolar, clinical depression, or typical college student stressors (e.g., time management). Participants read a paragraph describing the life issues associated with their assigned condition and were told to imagine living with these issues. The participants then were asked to imagine themselves in an Abnormal Psychology classroom and answer questions that addressed comfort levels with professors, class participation, disclosure of personal information, and classroom seating, based on their assigned condition. Participants who were told to imagine having a psychological disorder perceived the college classroom as less comfortable than students who were told to imagine themselves dealing with typical college issues, suggesting that even imagining a disorder helped participants realize some of the stigma and social distance that accompanies psychological disorders. Participants who were assigned schizophrenia or depression seemed to feel most uncomfortable, suggesting that there may be a hierarchy in how non-diagnosed individuals perceive psychological disorders and could lead to a good classroom discussion.

### **KIDS HAVING KIDS: FACTORS THAT INFLUENCE PEOPLE'S OPINION ON TEENAGE PREGNANCY PREVENTION**

*Presented at the National Conference on Undergraduate Research, Ithaca, N.Y., March-April 2011*

**Student: Laura Huffaker** 2012

Faculty Mentor: Jennifer Solomon, Ph.D.  
Department of Sociology and Anthropology  
(SOCL 516 – Solomon)

The purpose of this research is to examine if factors such as support of abortion, religion, region, dwelling type, age at which first child was born, and political views influence people's views on teenage pregnancy prevention. The sample used for this research came from the year 2008 of the cumulative General Social Survey. The N of the sample is 2013. The mean age of the sample is 47.71 years. The mean level of education of the sample is 13.41 years. Females make up 54.08% of the sample, married people 48.17%, and whites 87.73%. The results of this research suggest a positive relationship between political views and support for teenage pregnancy prevention. The more politically liberal a person is, the more likely he or she is to support teenage pregnancy prevention. There also appears to be a positive relationship between acceptance of premarital teenage sex and support of teenage pregnancy prevention. If a person favors the acceptability of premarital teenage sex, then he or she will likely favor teenage pregnancy prevention. In conclusion, political views and acceptability of teenage premarital sex are both positively related to teenage pregnancy prevention. Other factors certainly influence teenage pregnancy prevention. When teenage pregnancy prevention programs are being made, policy makers should be sensitive to the complex nature and multiple influences that affect people's views on teenage pregnancy prevention.

### **FACTORS THAT IMPACT THE ACADEMIC EXPERIENCE OF FIRST GENERATION COLLEGE STUDENTS**

*Presented at the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

**Student: LaWana Reed** 2011 (McNair Scholar)

Faculty Mentor: Shebby Neely-Goodwin, Ph.D.  
Department of Social Work

First Generation College Students (FGCS) enter a complex new world upon entering college and many are not equipped academically, emotionally, and socially. Many underlying factors contribute to the success FGCS

can have in college. All students have to function in all areas of their lives to do well academically, emotionally, and socially. For FGCS, they do not necessarily know how to transition into college because they do not have a solid support system. FGCS' experiences are different and more challenging because of the lack of knowledge of college life. Academically, FGCS do not know how to transition into college or operate under the university's expectations. The university's expectations may seem very demanding and unreachable. Emotionally, FGCS may make decisions based on family and influences and not handle stress or college satisfaction well. Family members who never went to college may cause stressors on the student that may be reflected in their school work. Socially, FGCS may have trouble building relationships with faculty, staff, and other students of the university. Not having understanding and knowledge about college can keep FGCS from getting the necessary help they need to successfully complete assignments. This study examines these three areas of FGCS' lives rigorously by conducting a thorough review of literature and methodology.

### **ENVIRONMENTALISM SEDUCED: NEOLIBERALISM AND THE ENVIRONMENTAL MOVEMENT IN THE UNITED STATES**

*Presented at The Annual Meeting of the South Carolina Political Science Association, March 2011*

**Student: Lorena Hildebrandt** 2011

Faculty Mentors: Michael Lipscomb, Ph.D., Tim Boylan, Ph.D., Jennifer Disney, Ph.D.  
Department of Political Science  
(PLSC 490)

This paper examines the connections between environmentalism and neoliberalism by analyzing the history of economic restructuring in the United States from Keynesianism to neoliberalism in conjunction with the history of 20th and 21st century environmentalism in the United States. I look at the internal shifts within the environmental movement from its ideological beginnings and then nonprofit institutionalization, and how mainstream environmentalism has developed ties with corporate interests within the neoliberal framework. Finally, I speculate on the trajectory of the environmental movement and offer a blueprint for the future in the youth climate movement. My title is taken from Hester Eisenstein's work on political economy about the seduction of the feminist movement by global capitalism (\*Feminism Seduced\* 2009). Like Eisenstein, I make a similar argument that mainstream environmentalism has been seduced by the political and economic strength of neoliberalism.

### **CRACKING THE CALCULUS CODE**

*Presented at the Mathematical Association of America Conference, April 2011*

**Student: Matthew Neal** 2013

Faculty Mentor: Joseph Rusinko, Ph.D.  
Department of Mathematics

The calculus classroom has relied almost solely on applications to physics and business in order to create meaningful, real-world examples for students. However, relying too heavily on the applications to these disciplines can lead students to have a narrow view of calculus and mathematics as a whole. This presentation introduces cryptography as a tool to teach, and reinforce, basic differentiation methods through highlighting calculus techniques involved in a Diffie-Hellman key exchange on an elliptic curve.



## PSYCHOLOGY MAJORS' PERCEPTIONS OF THE "MOST IMPORTANT THING" THEY LEARNED IN PSYCHOLOGY

*Presented at the 33rd Annual National Institute on the Teaching of Psychology,  
St. Pete Beach, Fla., January 2011*

**Students: Meagan Burns 2011 | Heather Ernst 2011**

Faculty Mentor: Merry Sleigh, Ph.D.  
Department of Psychology  
PSYC 471/472 – Sleigh)

Teachers realize that students are not going to remember every fact presented in class; however, teachers are usually hopeful that students will remember facts that are heavily emphasized and important to their discipline. With this in mind, we surveyed 115 undergraduate students to discover what information presented in their psychology classes they remembered and believed to be the "most important." Results revealed that the most common response categories for upperclassmen were as follows: explanations of a specific human behavior, career information about psychology, stats and research methods, psychological disorders, and function of brain structures. In contrast, lowerclassmen rated facts about human development and sleep as more important than research methods or psychological disorders. Women were more likely than men to rate facts related to human development as important. Upperclassmen and women reported that they based their answer on the fact they found most useful. In contrast, lowerclassmen and men based their answer on what they found most interesting. Seventy percent of students believed that professors focus on what is important in the field of psychology, while 30% felt that professors teach what they personally enjoy (regardless of its importance). However, almost every participant reported that whether professors thought their "important fact" was important or not was irrelevant to them. These data might be interesting to psychology teachers who most certainly have their own ideas about what students should be remembering and why.

## IF I KNEW THEN WHAT I KNOW NOW: STUDENTS' EXPECTATIONS BEFORE AND AFTER ENTERING COLLEGE

*Presented at the 33rd Annual National Institute on the Teaching of Psychology,  
St. Pete Beach, Fla., January 2011*

**Students: Meagan Burns 2011 | Heather Ernst 2011**

Faculty Mentor: Darren Ritzer, Ph.D.  
Department of Psychology  
(PSYC 471/471 – Ritzer)

Students' adjustment to college affects their performance. One factor that influences students' adjustment is how well college matches their expectations. We surveyed undergraduate students, with an equal mix of under and upperclassmen. Participants were asked to recall their perceptions of college while they were high school students and then to describe their current perceptions of college. Results revealed that in some arenas, their expectations were accurate. For example, participants expected the same amount of homework as they reported doing each week. They also were aware that they would be choosing their own classes, picking their own major, and having the option to take summer classes. In contrast, there were areas where students indicated that their expectations were incorrect. For example, participants reported writing more papers, having close relationships with more professors, paying more for books, and having more female professors than they expected. Participants felt that they were least informed about the classroom environment, the grading scale, the type of homework required, the rules of the residence halls, and the amount of available free time in college. Participants rated their parents as being the best source of college preparation, followed by college orientation and high

school counselors. The higher the mother's education, the more prepared students felt but also the less they realized how difficult it would be to pay for college. These data might be useful for high school teachers who want to prepare their students for the college environment and for college professors who want to understand the mindset of incoming students.

## COLLEGE STUDENTS' RECOLLECTIONS OF THEIR PRE-ADMISSION PERCEPTIONS

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Meagan Burns 2011 | Heather Ernst 2011**

Faculty Mentors: Merry Sleigh, Ph.D., Darren Ritzer, Ph.D.  
Department of Psychology  
(PSYC 471/472 - Sleigh & Ritzer)

Students' expectations of college affect how they transition to the new environment. Tavani and Losh (2003) demonstrated that when students base their performance expectations on their high school behavior, it is highly predictive of how well they do in college. We surveyed 125 undergraduates. Participants were asked to recall their feelings toward college while they were still high school students and then to assess the accuracy of those feelings. Participants rated a list of factors from the ones that they were most nervous about prior to college to the ones about which they were least nervous. Students were most nervous about getting good grades, picking the right major, paying for college, and making their parents proud. These were the same factors that students, having now experienced college, said they should have been most nervous about. However, the higher the students' college GPA, the less students felt they should have been worried about getting good grades in college. In addition, the more educated their parents were, the more students said they underestimated how worrisome college finances were going to be. "Interacting with professors" was rated as the variable participants worried about the least prior to attending college; however, when students were asked about what they should have been nervous about, interacting with professors rose from eighth (last) place to fourth place, the only variable that shifted position in the list. We found many gender differences. Thirty-six percent of men expected to have fewer relationships with professors than they actually have, and 29% expected to have more. When we examined women only, 60% expected to have fewer relationships than they actually have, while 25% expected to have more. Men who found college to be harder than they expected also reported that they felt like faculty were less approachable than they expected them to be. Dad's level of education did not predict daughter's feelings. In contrast, sons of fathers with less college experience expected college to be more difficult than they actually found it to be. Finally, having positive feelings toward college prior to arrival was associated with having a higher college GPA.

## COLLEGE STUDENTS' PERCEPTIONS ON THE ACCEPTABILITY OF ALCOHOL USE AT DIFFERENT AGES

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla. March 2011*

**Students: Meagan Grant 2011 | Evan Glasscock**

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

This study examines the perceptions of college students on the acceptability of alcohol use at different ages by drinkers that were 10, 15, 20, and 25 years old. We conducted a survey that consisted of 25 scenarios for the participant to rate highly unacceptable (1) to highly acceptable (6). Our hypothesis was that at age 10, alcohol use would be highly unacceptable, at age 15 alcohol use would be unacceptable, at age 20 alcohol use would be

acceptable and at age 25 alcohol use would be highly acceptable. We found that at age 10 alcohol use is highly unacceptable regardless of gender, at age 15 alcohol use for males is significantly more acceptable than for females, at age 20 alcohol use for females is significantly more acceptable than for males, and for age 25 alcohol use is significantly more acceptable for males than for females.

#### **A ESQUERDA BRASILEIRA: THE IMPACT OF BRAZIL'S LEFT ON LATIN AMERICAN POLITICS**

*Presented at the South Carolina Political Science Association, March 2011*

**Student: Meredith Edlin** 2011

Faculty Mentors: Jennifer Disney, Ph.D., Adolphus Belk, Ph.D.  
Department of Political Science  
(PLSC 490 – Disney & Belk)

Not only will Brazil become a major player economically, it will also be a political powerhouse in that it is active regionally and globally; it has strong ties with other world powers and has an advanced military that it does not really need to use (Armijo and Sotero). The growth of Brazil should remain on the United States' radar because of its regional popularity, power, and left-leaning ideological trends. With all this potential international power and sagacious regional influence, how does Brazil's current tendency toward the left affect the politics of its neighboring countries in Latin America? In this paper, I will examine the shift to the left in Brazil, also the relationship between Brazil and its neighbors, and how these relationships are impacted by the leftist politics of Brazil. I will end my research with a gaze towards the future and hypothesize how the left turn of Latin-American politics could create repercussions that span the globe.

#### **SCHOOL PSYCHOLOGY AND SCHOOL COUNSELING GRADUATE PREPARATION: SIMILARITIES AND DIFFERENCES**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011 and the 25th Annual Ronald McNair Commemorative Celebration and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

**Student: Muri Mata** 2011 (McNair Scholar)

Faculty Mentor: Joseph Prus, Ph.D.  
Department of Psychology  
(MCNR 300 - Fortner-Wood)

The fields of school psychology and school counseling make unique and important contributions to educational and mental health services in schools. However, the related nature of the two, and changes that have occurred since special education and pupil personnel work were first introduced in American schools have resulted in some ambiguity about each field's specific expertise, roles, and functions. The National Association of School Psychologists (NASP) and the Council for Accreditation of Counseling and Related Educational Programs (CACREP) review and accredit school psychology and school counseling programs, respectively. The required curricula of 68 school counseling and school psychology master's/specialist level programs were randomly selected from CACREP and NASP's approved lists. Programs were analyzed using information obtained from program websites and a curriculum analysis spreadsheet consistent with national standards for each field containing eleven basic curriculum categories with several specific content areas in each. Courses were placed based on their titles, but course descriptions were also examined when course titles were not sufficiently descriptive to allow a determination of content. Courses covering more than one content area were only counted in one area for statistical purposes. The credit hours for each course were also recorded. The overall difference based on program type and curriculum category for mean required credit hour was statistically significant, MANOVA Wilk's  $\lambda$  = .069,  $F(11, 56) = 69.075$ ,  $p < .001$ ,  $\eta^2 = .931$ . Significant differences ( $p < .001$ )

were found between program type for all curriculum categories except educational foundations, academic interventions, research/statistics, and practica/internship when using the covariate number of required credit hours, MANOVA Wilk's  $\lambda$  = .157,  $F(11,55)=26.806$ ,  $p < .001$ ,  $\eta^2 = .931$ . No significant differences were found in the overall amount of preparation in educational foundations, professional foundations, and human diversity/multicultural issues. The results of the curriculum analysis also showed similarities in the preparation. Both types of programs were likely to have coursework in human/child development, general assessment, behavioral/social intervention, an introductory seminar class, and at least one research methods course, and practica and internship. It is important to note that because school counselors and psychologists are trained in similar and different areas, collaboration among them should be more easily facilitated.

#### **VARIATION IN BORE HOLE MORPHOLOGY AND DETERMINATION OF GASTROPOD PREDATORY SPECIES**

*Presented at the Geological Society of America Southeast Section - 60th Annual Meeting, Wilmington, N.C., March 2011*

**Student: Nicholas Scarborough** 2013

Faculty Mentor: Gwen Daley, Ph.D.  
Department of Chemistry, Physics, and Geology  
(GEOL351 – Daley)

Gastropod borehole data are used to analyze paleoecologic and evolutionary patterns of predator/prey interactions preserved in the fossil record. Variation in frequency and morphology of boreholes found on prey species may be due to differences in either the predator or prey behavior or morphology. For temporally similar assemblages, morphologic differences in predators are likely to be caused by having had different dominant predatory gastropod species. Determining that different predatory gastropod species were responsible for the predatory traces is therefore important. This determination is relatively straightforward for gastropod species that produce bore holes with different gross morphologies. Determining such differences among species that produce similar bore hole morphologies is more difficult. We attempted to make this determination for *Oichnus paraboloides* bore holes from the three most abundant species of bored bivalves (*Chione elevata*, *Carditamera floridana* and *Anadara transversa*) from collections at the Caloosa Shell Quarry (Hillsborough County, Florida) of the Pleistocene Fort Thompson and Bermont Formations. Previous research uncovered significant differences in bore hole frequencies on these prey species between the two formations, but the data collected for that research was not useful in determining whether the differences were due to different dominant predators or some other factor. Therefore, we collected new data to allow us to determine whether or not it is likely that two different species were responsible for the other observed variation. We measured the inner and outer bore hole diameter, the distance between the bore hole and the prey's umbo and other morphological variables for several hundred bored specimens and compared the variation within individual species found in the different formations. The results of these analyses will be presented.

#### **THE DUKE'S STRUGGLE FOR ORDER: THESEUS'S CHOICE OF EVENING ENTERTAINMENT**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Nicole Abbott** 2012

Faculty Mentor: Matthew Fike, Ph.D.  
Department of English  
(ENGL 305 – Fike)

This paper investigates Duke Theseus's choice of evening entertainment in Shakespeare's *A Midsummer Night's Dream*. These choices include the battle with the Centaurs from Ovid's *Metamorphoses*, Orpheus's death at the

hands of “tipsy Bacchanals,” the nine muses’ lamentation for the loss of learning (a possible allusion to Edmund Spenser’s *The Teares of the Muses*), and finally the death of tragic lovers Pyramus and Thisbe. Whereas previous critics like Ralph Berry and D’Orsay Pearson have emphasized the duke’s character and his attitude toward the imagination as a context for his choice, the present study argues that Theseus’s choice of Pyramus and Thisbe reflects his desire for order, and that the play-within-the-play thus constitutes a microcosm of the ideal Athens. Besides underscoring the paradoxical relationship between tragedy and marriage in Theseus’s own relationship, the evening entertainment enacts an ordered society insofar as it engages the “mechanicals,” common laborers, in a celebration of patriarchal authority.

#### RELATIONSHIPS AMONG COMFORT, MOOD, AND EATING SPEED IN YOUNG ADULTS

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students:** Nina Platenberg 2012 | Laura Durfee 2011

Faculty Mentor: Merry Sleight, Ph.D.

Department of Psychology

(PSYC 302 – Sleight)

The current study examined 55 young adults’ speed of eating, mood, and personality characteristics in three different time settings (9:30 am, 11:00 am and 12:30 pm). Each participant was asked to select a Pop-tart flavor of their choosing and eat it prior to beginning a survey. The researchers secretly recorded the amount of time it took the participant to consume the Pop-tart. The survey assessed their mood, stress level, eating habits, and perceptions of their own eating behavior. Results revealed that the less time it took participants to eat the Pop-tart, the faster they reported eating in general and the less time participants thought it took them to eat the Pop-tart. The less participants enjoyed the Pop-tart, the slower they reported eating it; however, actual time did not support their belief. The amount of time it took to eat the Pop-tart was not related to age, grade point average, self-esteem, enjoyment of the Pop-tart, willingness to try new foods, being a picky eater, stress level, or desire to eat alone. The amount of time it took to eat the Pop-tart also was unrelated to negative or positive emotions. People who preferred to eat alone believed that they ate their Pop-tart faster; however, the actual time did not support that belief. The more people preferred to eat alone, the higher their negative emotions. The slower participants felt they tend to eat, the more negative they felt about the study. We divided the participants based on the time of day they took the study and found that the 12:30 pm group ate faster than the other two groups; however, hours since their last meal did not predict speed of eating. In sum, we found that participants who enjoyed what they were eating made accurate assessments regarding their speed. In contrast, participants who were self-conscious about eating in public were inaccurate and unhappy. Last, we found that participants ate faster at “lunch time” regardless of their hunger level, suggesting that time of day may influence eating speed. These findings may be helpful to those who are interested in better understanding eating behaviors, both normal and atypical.

#### UNDERGRADUATE ATTITUDES ON SKIN LIGHTENING

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student:** Portia Watson 2011

Faculty Mentor: Douglas Eckberg, Ph.D.

Department of Sociology and Anthropology

(SOCL516 – Eckberg)

This research addresses two main questions. One: How much of a bias in favor of lighter skin exists among African Americans and among Caucasians? Two: What percent of African Americans actually use products or practices to lighten their skin? Past research suggests that skin lightening is practiced because of a deep rooted

unconscious self hate, but how much does this still exist? There has not been much research on attitudes and reasons behind skin bleaching even though there is much research on colorism and skin color stratification in the black community. To do this research we created a survey that was given to students at a southern university. The sample includes 119 African American students and 547 Caucasian students. The survey questions for this study are one component in a broader study given at the university. The particular research at hand includes questions about students’ preferred skin tone, about whether one has worked to lighten his or her skin, and about their thoughts on skin lightening. We also assess variables that are correlated with these items.

#### EXAMINING THE MATHEMATICAL SUB-SYMBOLIC REGISTERS USING CRYPTOLOGY

*Presented at the South Carolina Council of Teachers of Mathematics Conference, Greenville, N.C., November 2010*

**Students:** Rachel Webster 2012 | Heather Martin 2012

Faculty Mentor: Joseph Rusinko, Ph.D.

Department of Mathematics

We define the mathematical symbolic register as a situationally defined collection of individual symbols in the math context. We subdivide this register into three sub-registers: the English letters sub-symbolic register, the commonly used mathematical symbols sub-symbolic register, and the abstract symbols sub-symbolic register. In order to test students’ ability to work with each sub-register, we made cryptograms using the three sub-symbolic registers and had college students attempt to complete them. No significant difference was found when students worked with any of these three registers. We conclude that the choice of sub-register used to pose mathematical problems does not significantly contribute to the difficulty students have performing mathematical tasks.

#### A CROSS-CULTURAL COMPARISON: AMERICANS AND NEW ZEALANDERS’ PERCEPTIONS OF AND ATTITUDES TOWARD HOMOSEXUALS

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students:** Rachel Wood 2011 | Lisa Wilkinson 2011

Faculty Mentor: Merry Sleight, Ph.D.

Department of Psychology

(PSYC 302 – Sleight)

Previous research has demonstrated that homosexuals are a stigmatized group in the United States (e.g., Bannach, Burgess, & Muse, 2010; Louderbeck & Whitley, 1997; Polimeni, Hardie, & Buzwell, 2000). Morrison and Morrison (2009) found that American attitudes are more negative than those of Canadians, despite the geographic proximity of the two countries. Our study added to the growing cross-cultural literature on this topic by comparing American attitudes to those of New Zealanders. Hundreds of adults responded to an online survey that assessed attitudes toward homosexuality, perceptions of societal views toward homosexuality, and knowledge of the laws surrounding homosexuality. Our scale consisted of questions derived from the Modern Heterosexism and Queer/Liberationist scale (Massey, 2009), the Multidimensional Heterosexism Inventory (Walls, 2008), and the Modern Homonegativity Scale (Morrison & Morrison, 2002). Results revealed that American and New Zealander residents reported similar attitudes toward homosexuals; however, when only heterosexual participants were considered, New Zealanders revealed more positive attitudes. In other words, heterosexuals in New Zealand are more accepting of homosexuals than are American heterosexuals. In support of this finding, New Zealanders overall also reported more societal equality for homosexuals. Being female, less religious, and a voter were associated with more positive attitudes toward homosexuals. This study offers a new cross-cultural insight and contributes to a better understanding of attitudes toward homosexuals.

### GENDER, SOCIAL ENGAGEMENT, AND SEXUAL ORIENTATION PREDICT ATTITUDES TOWARD HOMOSEXUALS IN AMERICA AND NEW ZEALAND

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011 and the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Students:** Rachel Wood 2011 | Lisa Wilkinson 2011

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 471/472 – Sleight)

This two-phased project examined factors that influence attitudes toward homosexuals. Phase I was a continuation of online data collection assessing American and New Zealanders' perceptions of homosexuality (n = 928). Results revealed that male homosexuals had more positive attitudes toward homosexuality than did male heterosexuals. Women's attitudes were more positive and did not depend on the sexual orientation of the woman. United States homosexuals had more positive attitudes toward homosexuality than did US heterosexuals. New Zealanders' attitudes were more positive and did not depend on the sexual orientation of the individual. We also found unique predictors for attitudes toward homosexuality depending on the country. For example, in the United States, voting behavior did not predict attitudes toward homosexuality, whereas in New Zealand, people who were likely to vote also had more positive attitudes toward homosexuality. In Phase II, 283 participants were divided among three conditions. One group took a survey in a group setting with the survey administrator wearing a pro-gay shirt, one group viewed a pro-lesbian shirt, and one group viewed a neutral shirt. Results revealed that attitudes toward homosexuality were lower when the researcher wore either of the pro-homosexuality shirts. Across conditions, women were always more positive toward homosexuality than men, with the exception that both genders had equal agreement to the notion that "homosexuality is a sin." African-American and Caucasian participants had similar attitudes toward homosexuality; however, when questioned about having a homosexual son or daughter, African-Americans were more positive and accepting than Caucasians, while at the same time being more likely to view homosexuality as a sin. The more participants reported attending religious services, the more negative their attitudes toward homosexuality, the more likely they were to vote, and the less confident they were regarding laws relating to homosexuality. These findings suggest that a combination of cultural, situational, and personal factors may contribute to an individual's perceptions of homosexuality.

### ANIMUS POSSESSION: FEMININE ARCHETYPES IN KING LEAR

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student:** Rebecca Ayers 2011

Faculty Mentor: Matthew Fike, Ph.D.  
Department of English  
(ENGL 305 – Fike)

Goneril and Regan, the eldest daughters in Shakespeare's King Lear, illustrate the Jungian condition known as animus possession. Previous Jungian critics like H. R. Coursen have noticed that they exhibit much more masculine traits than their younger sister Cordelia. This paper furthers the inquiry by concluding that the eldest daughter Goneril has a more advanced case of animus possession than her younger sister Regan and they stand together in opposition to Cordelia's embodiment of true femininity. In other words, the elder daughters' masculine behavior has its root in a failure of individuation. All this results, the paper argues, from Lear's own psychological problem, anima possession, which arises when he is forced in earlier life to take on a maternal role following the loss of his wife.

### POVERTY VS. THE INTERNATIONAL FINANCIAL INSTITUTIONS: THE TRIAL OF THE NEOLIBERAL STRUCTURAL ADJUSTMENT PROGRAMS OF THE WORLD BANK AND INTERNATIONAL MONETARY FUND

*Presented at the 40th Annual Meeting of the North Carolina Political Science Association, Charlotte, N.C., February 2011*

**Student:** Robert Ralston

Faculty Mentor: Jennifer Disney, Ph.D.  
Department of Political Science

Global poverty is a pandemic that is caused by the internal factors within a country and the external factors of globalization. Post-colonial countries in particular have failed to develop at the same rate as their Western counterparts, and this is in part due to a form of neocolonialism: the International Financial Institutions of the World Bank, World Trade Organization, and International Monetary Fund. In a format similar to a court case, this paper aims to analyze the impact of neoliberalism on developing nations, in particular, how the International Financial Institutions are mechanisms used by those who believe in neoliberalism to, perhaps unwittingly, destroy the economic possibilities of the developing nations of the world. A case study of Ghana is utilized in order to offer empirical evidence of the theoretical claims made.

### IN VITRO CHARACTERIZATION OF THE DNA BINDING PROPERTIES OF A NOVEL VARIANT OF HIGH MOBILITY GROUP A1 (HMGA1)

*Ronald Nelson Jr., Amy Deng, Cannon Whiteneck, Dr. Takita Sumter*

*Presented at the Annual Biomedical Research Conference for Minority Students, November 2011, the 25th Annual Ronald McNair Commemorative Celebration, and 10th Annual Research Symposium, Greensboro, N.C., January 2011*

*Supported by a Research Initiation Grant from NSF, a National Cancer Institute Grant from NIH, and a South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student:** Ronald Nelson Jr., 2011 (McNair Scholar)

Faculty Mentors: Takita Sumter, Ph.D., Cheryl Fortner-Wood, Ph.D.  
Department of Chemistry, Physics, and Geology

The High Mobility Group A protein (HMGA) family is involved in neoplastic cell transformation and metastasis in cancerous cells. The protein family - consisting of HMGA1a and HMGA1b, and HMGA2 - possesses structural similarities that including their nuclear presence and association with various human malignancies. Consistent with the presence of three domains bearing a Proline-Arginine-Glycine-Arginine (PRGR) motif, these proteins act by binding to the minor groove of A-T rich DNA sequences. Because arginines at the center of the PRGR DNA binding motifs are subject to covalent modification in some cancers, we investigated the impact of arginine substitutions on the ability of HMGA1 to bind DNA. We assessed the DNA binding affinity of HMGA1 bearing arginine to alanine (R25) and arginine to lysine (R25K) substitutions using the A-T rich portion of untranslated region upstream of the kit ligand coding sequence. The binding affinity of HMGA1 for this A-T rich sequence was comparable to that observed in previously published studies by XXX et.al. Conversion of R25 to both A and K compromised the ability of HMGA1 to interact with the kit ligand

promoter. The specific binding affinity will be quantitatively determined in future studies. Nonetheless, this finding suggests that the presence of a positively charged side chain does not preserve the ability of HMGA1 to bind A-T rich sequences within the kit ligand promoter. Current studies are underway to evaluate the binding of R25K to other HMGA1 targets as well as evaluate the oncogenic potential of this mutant in vivo. It is predicted that the evaluation of arginine's role in HMGA1 function could provide a better understanding of the role played by posttranslational modifications in regulating the oncogenic pathways.

#### REVEALING MALVOLIO'S HYPOCRISY IN SHAKESPEARE'S TWELFTH NIGHT

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Sarah Beeson** 2012

Faculty Mentor: Matthew Fike, Ph.D.  
Department of English  
(ENGL 305 – Fike)

This paper satirizes the hypocrisy of the Early Modern Puritans through the character Malvolio in Shakespeare's Twelfth Night. The play's original audience would have disliked the Puritans due to their opposition to the theater as well as their desire to convert everyone to Puritanism. Therefore, play-goers were primed to understand Malvolio, who ultimately turns all the characters against him, as a self-righteous Puritan. Previous critics such as Becky Kemper and Thad Jenkins Logan have commented on some of the relevant details, particularly as Malvolio's disapproval of festivity versus his outrageous behavior following his discovery of the forged letter. The present study argues that Shakespeare uses Malvolio to satirize the hypocrisy of the Early Modern Puritans through his desire for worldly objects, romantic love, and increased social status. In the final analysis, Malvolio demeans himself by revealing his hidden worldly desires, and his sworn vengeance at the end of the comedy suggests that he has made no psychological progress.

#### SENSATION SEEKING AND OTHER FACTORS AFFECTING STUDENTS' DECISION TO STUDY ABROAD

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Satavia Douglas** 2012 | **Shalaya Davis** 2012 | **Jessica Lockhart** 2012

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

We examined whether sensation seeking predicted college students' willingness to study abroad. We also examined other factors that influence a student's decision regarding study abroad. Sixty undergraduates completed a survey that assessed their perceptions of study abroad, factors affecting their interest in studying abroad, their sensation-seeking score, and demographics. Results revealed that the higher the participants' sensation seeking score, the more they said they would regret not studying abroad and the greater their desire to travel. We ranked participants' responses to the question, "What are the benefits of studying abroad?" The highest ranked benefit was to gain maturity and insight into self, followed by meeting new people, improving employment prospects, opportunity to travel, independence, fulfilling graduation requirements, learning a new language, and taking interesting classes. We ranked participants' responses to the question, "What are the risks of studying abroad?" The highest ranked risk was running out of money, followed by the dangers of a country, not graduating on time, language barriers, not being able to adjust, feeling alone, accidents or injuries, losing relationships back home, and unknown teaching methods. We compared men and women. Women rated 'to aid in graduation' as a more important factor for study abroad than did men, and 'meeting with the study abroad advisor' as more important than did men. There were no other gender differences in factors related to

study abroad, including the financial considerations. We compared African Americans and Caucasians. African Americans were more likely to rate 'to aid in graduation' as a more important factor in studying abroad. Caucasians were more likely to agree that they would regret if they did not study abroad. We compared freshmen to all other students and found no differences between these two groups in reasons to study abroad. In sum, we found that sensation seeking students did have an increased desire to study abroad. In addition, we found that students had fairly similar perceptions of studying abroad, regardless of their age, gender, race, or class status. These data may be useful to students who are considering study abroad and to college advisors who want to most effectively market the study abroad experience.

#### GENE EXPRESSION IN A 3-D CARDIAC TISSUE CULTURE MODEL OF ISCHEMIA: A COMPARISON OF MICROARRAY AND REAL-TIME PCR ANALYSIS

*Presented at the Annual Biomedical Research Conference for Minority Students, Charlotte, N.C., November 2010.*

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student: Shanequa Bryant** 2010 (McNair Scholar)

Faculty Mentor: Kimberly Wilson, Ed.D  
Department of Biology

Reduced blood flow to the heart from myocardial infarction can lead to many serious consequences including cellular death. To better understand the mechanisms and characteristics of cellular response to cardiac injury after myocardial infarction we investigated the effects of atmospheric (21%), physiological (6%), and hypoxic (1.5%) oxygen levels in a 3-D in vitro model of cardiac ischemia. Our aim was to categorize and compare the expression levels of genes identified as significant in the oxidative stress response of ischemia using microarray analysis and to validate the expression levels of these significant genes using real-time PCR analysis. RNA was isolated from cardiac tubes exposed to different oxygen levels and used to make microarray hybridization probes for the GeneChip® Rat Genome 230 2.0 Array. Gene clustering analysis was based on four oxygen level combinations: 6%, 1.5%, and 21%; 6% vs. 1.5%; 6% vs. 21%; and 1.5% vs. 21%. Our results revealed that only 341 out of 31,099 genes were identified as significant based on ANOVA. Comparative analysis of 341 genes revealed that the genes were involved in cardiac myocyte apoptosis, hypoxia, cell cycle and signaling, angiogenesis, immune response, extracellular matrix, cell adhesion, wound response, development, and muscle contraction. Heatmap analysis indicated that the majority genes were upregulated in cardiac tubes grown in 21% O<sub>2</sub> compared to those grown in 6% O<sub>2</sub>. We selected eight of significant genes from the microarray analysis and two other genes (HIF-1 and IL-6) well known to be involved in cardiac ischemia to validate using real-time PCR analysis. Our results indicated that only four (BNIP3, PdK1, HIG1, and Aldoc) genes identified as being significant using microarray analysis were determined to be significant based on real-time PCR analysis. These results showed that the expression levels of BNIP3, HIF-1, and HIG1 were significantly higher in the cardiac tubes grown in 21% O<sub>2</sub> compared to those grown in 6% O<sub>2</sub>. These results suggest real-time PCR is a useful and necessary tool to validate microarray analysis. Also, these results further suggest that 21% O<sub>2</sub> used for physiological conditions might not be the ideal condition for cardiac models of ischemia because of increased oxidative stress.

## A MULTIGENRE APPROACH TO “THE LADY OF SHALOTT”

*Presented at the Sixth Annual Department of English Undergraduate/Graduate Research Conference, Winthrop University, March 2011*

**Student: Stephanie Thompson** 2012

Faculty Mentor: Casey Cothran, Ph.D.  
Department of English  
(ENGL 200 – Cothran)

I am examining Alfred Lord Tennyson’s “The Lady of Shalott” through the lenses of three different genres: literature, art, and music. This topic is important because it exemplifies the benefits of exploring a piece of literature through more perspectives than just that of the English scholar. Using the scholarly research of Shuli Barzilai, Arthur L. Simpson, and others, along with the artistic works of Tennyson, Emilie Autumn, Loreena McKennitt, and William Waterhouse, I explore the connections and interpretations between these disparate genres in reaction to the poem. This paper attempts to explain the divergent and yet inter-connected representations of the psychology of the lady and her patriarchal society in multiple modes of expression: literature, art, and music.

## POSITIVE AND NEGATIVE REINFORCEMENT EFFECTS ON MOTIVATION

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Students: Stephanie Wilburn** 2011 | **Valerie Sturm** 2011

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

This study examined positive and negative reinforcement’s effects on motivation. Participants were 60 female undergraduate students. They were each given a survey containing 30 positive or negative reinforcement scenarios. Each scenario included a household task and a monetary amount. The positive reinforcement scenarios were phrased in terms of payment while the negative reinforcement scenarios were phrased as a cancelled debt. Participants rated their motivational level for each scenario on a scale of 1, not at all motivated, to 10, extremely motivated. A 3 (money) x 2 (reinforcement) mixed analysis of variance (ANOVA) was used to assess if there was a difference between amount of money given or owed (within-subjects) and type of reinforcement (between-subjects) on the level of motivation. The interaction was not significant,  $F(2, 1.485) = 1.281, p > .05$ . Participants in the positive reinforcement group ( $M = 5.85, SD = 1.86$ ) did not differ significantly in motivation compared to the negative reinforcement group, ( $M = 6.05, SD = 1.01$ ),  $F(1, 58) = .606, p > .05$ . These results did not support our hypothesis that negative reinforcement would be a higher motivator than positive reinforcement. The levels for money were divided into groups of small, medium, and large. There was a significant main effect for amount of money,  $F(1.485, 86.106) = 223.395, p < .05, \eta^2 = .956$ . Motivation was significantly higher when a large amount of money was offered ( $M = 8.55, SD = 1.48$ ) in comparison to medium amounts ( $M = 6.8, SD = 1.76$ ), which was also higher than motivation for small amounts ( $M = 4.38, SD = 1.80$ ). Overall this study showed that positive and negative reinforcement have the same effect on motivation but that the size of the monetary reinforcer did have a significant effect as a motivational factor.

## THE EFFECT OF INJURY ON COLLEGE ATHLETES’ LIFE SATISFACTION

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Student: Tari Ham** 2011

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

The current study updated existing research by examining the life satisfaction of injured athletes to those of non-injured athletes and non-athletes. We hypothesized that injured athletes would have lower life satisfaction than other athletes. Participants were 80 undergraduate students, ranging in age from 18 to 35, and representing injured athletes, non-injured athletes, and non-athletes. Participants responded to a survey that assessed self-perception, life satisfaction, college experience, and perceptions of college athletics. We compared athletes who had suffered a career-ending injury to those who had not using an independent t-test. Athletes who had been injured were less satisfied with college and were less likely to agree that college was going the way they anticipated. We asked injured athletes to respond to a series of statements regarding the effect their injury had on personal relationships. They reported that the injury changed their relationship with their coach the most, followed by their relationships with their teammates. Their relationships with their families and how they viewed themselves were not affected by the injury. On a five-point scale, injured athletes agreed with the following statements: they were not prepared for the injury (4.24), life was better before the injury (3.94), the injury caused depression (3.76), prior to injury, athletics took up most of their time (3.76), it was hard to adjust to college after the injury (3.65), and it was hard to adjust to life after the injury (3.65). Injury affected male and female athletes similarly. The higher the participants’ age, the less prepared they were for the injury. GPA and class standing did not predict how athletes responded to injury. We compared the attitudes on athletics of college athletes to non-athletes. Athletes were more likely to agree that their peers place too little emphasis on athletics. Non-athletes were more likely to agree that athletes have it easier academically, that their school helps injured athletes, and that less funding should go to athletics. A better understanding of the consequences of injury may improve the services provided to injured athletes.

## FINDING YOUR FLOW: OPTIMAL TEACHING EXPERIENCES IN THE COLLEGE CLASSROOM

*Presented at the 33rd Annual National Institute on the Teaching of Psychology, St. Pete Beach, Fla., January 2011*

**Student: Tiana Tallant** 2011

Faculty Mentor: Donna Nelson, Ph.D.  
Department of Psychology

In recent years, psychologists have begun to focus more energy on exploring human potentials and strengths. Scholars investigating these topics have examined the correlates of subjective well-being. Work by Mihaly Csikszentmihalyi has established a link between well-being and engaging life experiences. Csikszentmihalyi (1990) describes the experience of “flow” as one in which an individual becomes thoroughly absorbed in an activity that is meaningful, enjoyable, and presents challenges that match skills. Flow experiences are characterized by total concentration, intrinsic interest, and a lack of self-consciousness. These experiences have been reported in contexts such as sports, artistic pursuits, and teaching gifted children. We surveyed college professors to determine whether flow is a common experience while teaching in the college classroom. We also explored predictors of flow experiences. Our findings indicate that the experience of flow is less common for professors teaching three or fewer years compared to more experienced professors. Furthermore, professors who had been teaching more than 15 years were the most likely to experience flow. Respondents reported more experiences of flow in classes that had been taught multiple times compared to classes taught for the first time. Respondents

also reported more experiences of flow in small classes (fewer than 25 students) and moderate sized classes (25-45 students) compared to larger classes. Respondents rated their own intrinsic interest and preparation as well as student engagement as equally important to their experience of flow and more important than student ability. We also found the following variables to be unrelated to flow: gender of the professor, undergraduate versus graduate class, introductory versus upper-level class, and type of class activity.

#### **HUMOROUS PRESENTATION OF INFORMATION FACILITATES LEARNING AND MEMORY**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Tiffany Piccolo 2012 | Dustin McCully 2011**

Faculty Mentor: Merry Sleight, Ph.D.  
Department of Psychology  
(PSYC 302 – Sleight)

The purpose of our study was to examine the effect of humor on young adults' ability to learn and recall new information; in this case, the material to be learned was presented to the participants without involving an "instructor." Participants were 111 young adults. Participants first were given a list of little-known facts about cats and allowed six minutes to study the material. Half of the participants received a cat fact sheet that included a variety of cat-related cartoons, while the other half of the participants received the same facts with no cartoons. Immediately following, participants completed a survey that assessed their memory for the cat facts, attitudes toward humor as a teaching tool, and demographics. Some of the questions about the cat facts were presented at the beginning of the survey (to assess short-term memory) and the remainder was presented at the end (after interference from the intervening questions). We computed a 'Cat Knowledge One' (CAT1) score for each participant by adding the number of correct responses at the start of the survey and a CAT2 score for correct responses at the end of the survey. Participants in the humor condition scored significantly higher on the CAT1 than did participants in the non-humor condition. There were no significant differences on CAT2 scores. Cat ownership, GPA, age, and enjoyment of humor did not predict performance on the cat fact quizzes. In other words, the only variable that explained performance on CAT1 was the manner in which the cat facts were presented. Compared to women, men were more likely to agree that they learn better with humor. A 2 (condition) X 2 (gender) ANOVA revealed that men performed better than women in the humor condition, whereas women performed better than men in the non-humor condition on CAT1. Ironically, when men and women were asked to rate the importance of a college professor being funny, there were no gender differences. Taken together, these findings suggest that humor can facilitate short-term learning, especially for men.

#### **GENDER DYNAMIC OF CELL PHONE USE: TEXTING AND TALKING**

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Toniqua Mikell 2011**

Faculty Mentor: Douglas Eckberg, Ph.D.  
Department of Sociology and Anthropology  
(SOCL 516 – Eckberg)

Cell phones are an increasingly present technology in our society. The studies described below consist of student responses to a survey administered to Winthrop University students. The data analysis consisted of using a statistics program to do frequency runs, cross tabulations, and Chi-Square tests. The results of my studies do not align with the results of other studies. My findings suggest little influence of gender on using cell phones for either text messaging or talking, whereas the findings of others suggest that females are more likely to communicate via text message and males are more likely to communicate via phone call.

#### **THE GOOD, THE BAD, AND THE UGLY: EFFECTS OF ROMANTIC RELATIONSHIPS ON ACADEMIC SUCCESS**

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students: Vitta Clawson 2012 | Whitney Houston 2012 | Alicia Owens 2012**

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

The purpose of this experiment was to examine whether college students' academic success is affected by their romantic relationships. We measured hope in relationships and social support to uncover their effect on academic success. Our hypotheses were supported. Hope in relationships and social support were significant in predicting academic success. College students measure their success on different levels. Previous research has shown that personal factors have influenced the academic success of students. Socioeconomic factors are also associated with college performance (Kirby, White, & Arugete, 2007). For any given student, success may have different outcomes. Support that is received from relationships serves as encouragement and knowing someone is concerned with the student's best interest. Students form an array of relationships on college campuses. College provides students with an environment in which they can meet others with similar backgrounds and common interest. They form relationships with friends, professors, and romantic partners. Being in a supportive relationship or no relationship had a more positive effect on academic success in college students. While being in nonsupportive relationships had a more negative effect on academic success. Participants were recruited from several undergraduate classes and surveys were administered. Rosenberg's Self Esteem Scale (RSE; Rosenberg, 1965) was administered to reflect high or low self-esteem in participants. The Domain-Specific Hope Scale (DHHS; Sympson, 1997) was utilized to measure individual's hopefulness in academics and romantic relationships. The Experiences in Close Relationships-Revised Questionnaire (ECR-R Brennan, Clark, & Shaver, 2000) measured attachment anxiety. We administered The College Success Factors Index (CSFI; Hallberg, Hallberg, & Sauer 2003) which measured academic college student readiness and success in their early years of higher education. The Social Provisions Scale (SPS; Cutrona & Russell, 1987) was utilized to measure perceived social support based on six provisions which included: reliable alliance, social integration, opportunity of nurturance, attachment, reassurance of worth, and guidance.

#### **SILENT CAUSALITY: UNDERSTANDING SUICIDE SURVIVOR GROUPS & HELPING THROUGH THE GRIEF PROCESS**

*Presented at the Creating Caring Connections Symposium, September 2010 and the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student: Wendy Adams 2011**

Faculty Mentor: Ameda Manetta, Ph.D.  
Department of Social Work

Feelings of sorrow coupled with the sudden loss of a loved one shock and a sense of hopelessness are what an estimated 180,000 people a year who are bereaved by suicide feel and experience. The societal taboo of suicide often times complicates emotions causing long term and often-complex grief symptoms that can take years to recover from. What to do next, who to talk to and who not to talk to are often questions left to the survivors to figure out on their own. Literature supports the current trend of mutual aid represented through suicide survivor groups as means of helping those bereaved by suicide. This presentation will discuss who suicide survivors are, the dynamics of suicide survivor groups, and the findings of a current study of suicide survivor groups in the southeast United States. The presentation also addresses the dynamics of suicide survivor groups, the

various types of suicide survivor groups, and how to use “narrative therapy,” a common form of intervention and treatment that many social workers can implement. Future research areas concerning the evaluation and effectiveness of this form of healing will also be presented.

#### IMPACT OF STEREOTYPING AND RELATIONSHIP EXPECTATIONS IN DISNEY FILMS ON YOUNG ADULTHOOD

*Presented at the Southeastern Psychological Association Conference, Jacksonville, Fla., March 2011*

**Students:** Wendy Neff 2011 | Meagan Hogarth 2012

Faculty Mentor: Matthew Hayes, Ph.D.  
Department of Psychology  
(PSYC 302 – Hayes)

Children, parents, and grandparents all watch and enjoy the enormous collection of Disney films that have been produced to date. In today's society there are many different kinds of families and family relationships. Research shows that Disney films do not portray relationships in a realistic way (Tanner, Haddock, Zimmerman, & Lund, 2003). Aggression and mental illness are also recurring themes throughout many Disney films. This study was conducted to see if viewing Disney films as children would affect perceptions of aggression, mental illness, and relationship expectations in young adulthood. Participants consisted of 90 undergraduate students. Students completed a questionnaire measuring their relationship expectations, views on people with mental illness, and aggressive tendencies. Participants were also asked about their previous viewings of Disney films by ranking their top five films. All movies listed on the survey have been known to portray stereotypes and unrealistic relationship expectations. The results suggest that watching Disney films in childhood has no effect on adult aggression, perceptions of mental illness, or relationship expectations.

#### THE EFFECT OF CAFFEINE ON BROWN PLANARIA (DUGESIA TIGRINA) REGENERATION

*Presented at the Big South Undergraduate Research Symposium, Lexington, Va., April 2011*

**Student:** William Gray 2011

Faculty Mentor: Lee Anne Cope, Ph.D.  
Department of Biology  
(BIOL 300 – Cope)

For this particular project, headless brown planaria (*Dugesia tigrina*) were exposed to different concentrations of caffeine to determine their range of caffeine tolerance in relation to the regeneration of eyespots. To test regeneration, the planaria were surgically cut, and the incised parts containing the thorax and abdomen were placed into separate wells containing 0, 0.1, 0.15, and 0.2 percent caffeine solutions for a 10 day period to allow full regeneration of the eyespots. After the 10 day period ended, it was clear that as the caffeine concentrations increased, the number of planaria that regenerated eyespots decreased considerably. The observed frequencies for the planarias' regenerating eyespots were significantly different from the expected frequencies.

## Other Student/Faculty Collaborations

#### SYNTHESIS OF PYRAZOLOPYRIDINES BY RING CLOSURE OF PYRIDINE N-OXIDETOSYLHYDRAZONES

**Students:** William Lominac 2012 | Darius Ollison 2011 | Megan D'Angelo 2012

Faculty Mentor: James Hanna Jr., Ph.D.  
Department of Chemistry, Physics, and Geology

The pyrazolopyridine heterocyclic system is an important structural unit in a variety of antimicrobial, anti-tumor, and anti-inflammatory compounds. Because of its position as a “privileged structure” in medicinal chemistry, the synthesis of this unit continues to attract the attention of synthetic chemists. Many synthetic approaches to this ring system require functionalization of the 2-position of the pyridine ring prior to cyclization. We imagined that this requirement could be eliminated by taking advantage of the electrophilic 2-position of pyridine N-oxide using a strategy similar to the Reissert-Henze reaction. Since the introduction of a halogen to the 2-position of pyridine typically requires the formation of the N-oxide prior to halogenation, this approach would eliminate a step in the formation of this ring system, and thus be a more efficient method for the synthesis of these compounds. We have found that tosylhydrazones derived from 3-arylpyridine N-oxide can be cyclized in high yields by treatment with an electrophile and a base. For instance, 3-benzoylpyridine N-oxide tosylhydrazone, when treated with tosyl anhydride and triethylamine, gives a mixture of 1-(4-toluenesulfonyl)-3-phenylpyrazolo[3,4-b]pyridine and 1-(4-toluenesulfonyl)-3-phenylpyrazolo[4,3-c]pyridine in an 8:1 ratio and a combined yield in excess of 90%. Use of other electrophiles has been shown to improve the selectivity to as high as 60:1, but in a lower overall yield. To explore the application of this strategy to the cyclization of 3-alkenylpyridine N-oxide tosylhydrazones, 3-acetylpyridine N-oxide tosylhydrazone has been prepared in high yield and experiments toward the cyclization of this compound are being initiated. Future work will include the completion of the current optimization studies followed by an investigation of the scope and limitations of the method, and application of this strategy to the synthesis of other important heterocyclic ring systems.

#### DESIGN AND SYNTHESIS OF ZONE 1 AND 2 MODIFIED SPHINGOSINE KINASE INHIBITORS TO ENHANCE ORAL BIOAVAILABILITY

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH and a Winthrop Research Council Grant*

**Student:** Amber Wallace 2012

Faculty Mentor: T. Christian Grattan, Ph.D.  
Department of Chemistry, Physics, and Geology

Sphingosine Kinase 1 (SK1) is an overexpressed enzyme in cancer cells and phosphorylates Sphingosine (Sph) into Sphingosine-1-Phosphate (S1P). It has been found that the balance between Sph and S1P play a major role in growth and survival rate of cancer cells. S1P regulates cell proliferation so when the balance is shifted towards S1P the cell's growth and survival rate increases. In a normal cell where sphingosine concentrations are higher than that of S1P the cell is able to undergo a natural cell death. In most cancer cells, however, the balance is shifted towards S1P due to the overexpression of SK1 within the cancerous cells. As the concentration of S1P increases, the cell favors proliferation instead of natural apoptosis thereby spreading the cancer. If the concentration of S1P can be decreased then cancer treatments can become more effective in killing the targeted cells selectively. Therefore this enzyme is the target of SK1 inhibitors to reduce the production of S1P and shift



the equilibrium in the favor of the apoptotic pathway. While there are current SK1 inhibitors, many are lipid based and are not site specific to SK1. Recently researchers have discovered a non-lipid based and site specific SK1 inhibitor that has been identified as a promising drug candidate. However, this inhibitor it is currently not orally bioavailable making its activity dramatically decrease during in vivo testing. Our research goal is to design and synthesize a derivative of the SK1 template inhibitor described above that has a greater oral bioavailability while maintaining its promising inhibitory activity. My specific research goal is to synthesize one zone 1 derivative and two zone 1 and 2 derivatives of the template SK1 inhibitor which may be evaluated by our collaborator in specific bioassays for improved effectiveness.

#### **SYNTHESIS AND EVALUATION OF POTENTIAL AMYLOID-BETA AGGREGATION INHIBITORS**

**Students: Craig Stevens** 2012 | **Chelsea Brennan** 2013

Faculty Mentors: James Hanna, Jr., Ph.D., Robin Lammi, Ph.D.

Department of Chemistry, Physics, and Geology

Amyloid-beta is a protein found in human brain plasma and cerebrospinal fluid comprised of 39 to 43 amino acids. It is known to assemble into fibrils containing beta-sheet structure, which are the primary component of the extracellular senile plaques characteristic of Alzheimer's disease. It may be therapeutic to inhibit the aggregation of A $\beta$  so as to block fibril formation. Some natural aromatic molecules, such as resveratrol and curcumin have been shown to inhibit A $\beta$  aggregation. Based on these observations, three potential inhibitor molecules have been designed and synthesized, each a terphenyl-3,3',4,4'-tetrol in the para (PTT), meta (MTT) and ortho (OTT) configurations. Each molecule contains four terminal hydroxy groups to enable hydrogen bonding, and a semi-rigid phenyl linker section. Evaluation of the inhibitor molecules was made using the Congo Red Spectral Shift Assay, with incubation and shaking of the A $\beta$ . Congo red (CR) binds selectively to A $\beta$  containing beta-sheet secondary structure, resulting in a red shift of its absorbance spectrum. Starting with monomeric A $\beta$ , the aggregation profile is tracked by measuring the CR spectral shifts at specific time intervals, thus enabling quantification of the extent of aggregation. Time courses of A $\beta$  aggregation in the presence of inhibitor are compared to those for A $\beta$ ; alone to determine the extent of inhibition. Inhibitor addition can typically increase lag time before aggregation begins, slow the aggregation rate and/or reduce the maximum degree of aggregation at equilibrium. Each molecule was evaluated at a concentration (relative to A-beta) of ten molar equivalents. Both MTT and OTT completely abrogated aggregation, while PTT was less effective. OTT was further evaluated at relative concentrations of five and one molar equivalents resulting in moderate and marginal reductions of the maximum degree of aggregation at equilibrium respectively. Neither dosage resulted in significant change in lag-time or rate of aggregation. We are currently investigating the effect of removing the central phenyl ring by synthesizing and evaluating biphenyl-3,3',4,4'-tetrol (BTT). Future work includes verification of the above results through turbidity studies, and comparison of these compounds to other known small-molecule inhibitors.

#### **FRONTIER POLITICS: THE POLITICAL ESTABLISHMENT OF THE U.S. NATIONAL PARK SYSTEM**

**Student: Elizabeth Allred** 2011

Faculty Mentor: Marsha Bollinger, Ph.D.

Environmental Sciences and Studies

(ENVS 495 – Bollinger)

The National Park System includes over 350 sites which preserve our nation's cultural and natural heritage and provide recreation to the general public. This paper reconstructs the political aspects of the establishment of our national parks, representing 17 % of properties within the system. In the 19th century, the park system represented a cultural link between wilderness and "the frontier," sustaining a new romantic vision of the American West. However, strong land management policies would not emerge until early in the 20th century when President Theodore Roosevelt established five national parks in addition to many national forests, monuments, and wildlife refuges. The environmental policies related to the parks of selected 20th century presidential administrations (Herbert Hoover, Franklin Roosevelt, Dwight Eisenhower, Lyndon Johnson, Richard Nixon, Jimmy Carter, Ronald Reagan) are explored. The most important determinants in the establishment of the parks and park management policies have been the political and personal views of our presidents and their most trusted advisors. As our nation becomes more and more connected, park policies must shift from a focus on conservation and tourism to one of preservation so that future generations can experience these precious natural and cultural sites. In addition, expansion of the park system will no longer be possible through acquisition of wilderness areas. Instead, conversion of publicly and privately held properties into national parks will be necessary.

#### **DESIGN AND SYNTHESIS OF ZONE 2 MODIFIED SPHINGOSINE KINASE INHIBITORS**

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student: Jaclyn Cika** 2013

Faculty Mentor: T. Christian Grattan, Ph.D.

Department of Chemistry, Physics, and Geology

Sphingosine Kinase 1 and 2 are enzymes that are over expressed in cancer cells. This enzyme is known to phosphorylate sphingosine creating sphingosine 1-phosphate (S1P) and has been shown to be oncogenic. S1P is characterized as promitogenic (enhanced cell growth) and antiapoptotic (programmed cell suicide). The purpose of this research is to create a novel inhibitor that specifically binds to SK1/SK2 thereby preventing excessive cell differentiation and encouraging apoptosis. By synthesizing two target zone 2 modified inhibitors we will better be able to assess the pharmacophoric nature of this portion of the structure. In general we are synthesizing a furan derivative and a pyridine derivative to substitute for the pyrazole ring in our template compound.

#### **SYNTHESIS OF BENZISOXAZOLO[2,3-A]PYRIDINIUM TETRAFLUOROBORATES**

**Student: Jeffery Myers** 2012

Faculty Mentor: James Hanna, Jr., Ph.D.

Department of Chemistry, Physics, and Geology

Benzofuropyridines are the substructures of many pharmaceutical chemicals that have been shown to contain activity against cancer, tuberculosis, osteoporosis, and HIV. Related to these benzofuropyridines, are the lesser known benzisoxazolo[2,3-a]pyridinium tetrafluoroborates. With only three of these compounds known prior to our work, we became interested in developing a general synthesis of these potentially useful compounds. Former research by Abramovitch and coworkers showed that these compounds could be synthesized through an

intramolecular arylation of a 2-(2-aminoaryl)pyridine N-oxide. A recent discovery by Fagnou et al. hinted that the starting material required for this reaction could be synthesized by the direct arylation of pyridine N-oxide at the 2-position with an o-bromoacetanilide. Model studies with bromoanisole led to the observation that the best conditions for the arylation involved microwave heating of pyridine N-oxide, p-bromoanisole, a phosphonium tetrafluoroborate and potassium carbonate in toluene solvent. These conditions led to 90% conversion of the p-bromoanisole (determined by <sup>1</sup>H-NMR). Application of these conditions to the direct arylation of pyridine N-oxide with 2-bromo-4-methylacetanilide gave the desired product ((2-acetamino-5-methylphenyl)pyridine N-oxide) in an average yield of 35% (after chromatography). In an attempt to improve this yield, multiple ligands and ligand-to-catalyst ratios were screened. This screening found that a 3:1 ligand to catalyst ratio using di-t-butylmethylphosphonium tetrafluoroborate and palladium acetate gave an 80% yield (determined by <sup>1</sup>H-NMR using an internal standard). These conditions were then applied to a large scale synthesis, which gave an isolated yield of 65%. This compound was then subjected to hydrolysis, diazotization, and cyclization to produce 9-methylbenzo[4,5]isoxazolo[2,3-a]pyridin-5-ium tetrafluoroborate in a 72% yield. This newly developed process has been used to produce 2 other benzisoxazolo[2,3-a]pyridinium tetrafluoroborates. Direct arylation of pyridine N-oxide with the appropriately substituted 2-bromoacetanilides gave 2-(2-acetamido-5-fluorophenyl)pyridine N-oxide (54%) and 2-(2-acetamidophenyl)pyridine N-oxide (76%). Cyclization of these products gave, respectively, 9-fluorobenzo[4,5]isoxazolo[2,3-a]pyridin-5-ium tetrafluoroborate (79%) and benzo[4,5]isoxazolo[2,3-a]pyridine-5-ium tetrafluoroborate (84%). A scope and limitations study of this method is currently being conducted, and future work will involve application of this method to the synthesis of other novel heterocyclic ring systems.

#### **CLONING AND FUNCTIONAL CHARACTERIZATION OF NOVEL R25 VARIANTS OF HIGH MOBILITY GROUP A1 (HMGA1)**

**Student: Jiayue Deng** 2012

Faculty Mentor: Takita Sumter, Ph.D.

Department: Chemistry, Physics, and Geology

In addition to their roles in transcription, proliferation, and viral integration, evidence implicates HMGA1 proteins as mediators of oncogenic transformation. Enforced expression of HMGA1 leads to transformation in vitro and in vivo, potentially explaining the worsened outcomes in patients expressing the proteins. Although several targets of HMGA1a have been identified, the exact pathway is not well understood. The proteins are covalently modified at arginine 25 (R25) and activate transcription of kit ligand (kitL) oncogene in several cancers. To understand the contributions of R25 to HMGA1's oncogenic potential, we generated R25 variants, R25A and R25K, and compared their affinities for kitL to that for HMGA1. The affinity of HMGA1 R25A for kitL was 47% lower than that for the wild type protein, suggesting that the arginine residue plays an important role in the DNA binding properties of the protein. The R25K variant also had a 37% lower affinity for kitL. These findings suggest that electrostatic interactions are not required for HMGA1's interactions with putative target genes. Studies are currently underway to correlate DNA binding affinity with oncogenic potential. Understanding the mechanisms of HMGA1-associated cancers will contribute to efforts aimed at preempting cancer during early stages of progression.

#### **FRIEND-REQUESTING FITZGERALD: A MULTI-GENRE PROJECT USING FACEBOOK AND THE GREAT GATSBY**

**Student: Kelly Salyer** 2011

Faculty Mentors: Amy Gerald, Ph.D., Robert Prickett, Ph.D.

Department of English

F. Scott Fitzgerald's famous canon, *The Great Gatsby*, is taught all over U.S. high school classrooms and around the world. Its symbolism and underlying themes have the potential to reach and move people deeply, yet many students are averse to any type of in-depth textual study. From my experience, an introduction to any new novel is normally met with groans and sighs from students as they realize they will read yet another stuffy text. I decided to change this common reaction while teaching *The Great Gatsby* unit in my Rock Hill eleventh grade classroom. Instead of a paper or a large test, I chose to make a creative project be the large summative assessment at the end of the unit. Students were to create Facebook pages for each character in the book. Every Facebook page must reflect a character's personality, traits, and also chronicle major events in the story. That way, students were able to show me their understanding of the text while individually applying the concepts of characterization, plot summary, symbolism and setting. Students were split into groups of 4-5 and they drew a name out a cup in order to prevent people from creating a Facebook page for the same character. This project retained a high interest level amongst my students and covered several state standards. The poster I presented featured student work samples, a detailed list describing the steps in creating and presenting the Facebook project, SC ELA standards, performance data (grades), and a rationale for including the project in the classroom.

#### **FOOD, ECONOMICS, AND HEALTH: WHAT DRIVES OUR DECISIONS WHEN SHOPPING FOR FOOD?**

**Student: Melissa Starr** 2012

Faculty Mentor: Sarah Quick, Ph.D.

Department of Sociology and Anthropology

(ANTH 341- Quick)

Why do people make the choices they often do with a particular brand or food items? Are we becoming a product of what we put into our bodies? Does the economic status of an individual matter with food preference or food choice in a healthier lifestyle? How does marketing affect the consumer's decision on food selection? These are some of the questions I was considering in my ethnographic study on the consumer and food choice. I collected information from fourteen participants through direct shopping and post-shopping observations, questionnaires, and one-on-one interviews. I also participated in direct observation of the general public, noting their interactions with one another and the contents of their carts while blending in as the average consumer. I took into consideration what other co-shoppers were purchasing and any communication strategies with each other, as well as the effects of body language among consumers in a grocery store setting. In interviews I asked consumers about their health concerns, dietary preference, options on food choice in relation to their budget, and views on the pros and cons of a healthier dietary choice. Through my research I have found that a person's budget extensively determines whether or not they can achieve a healthier diet and that social structures of family and environment can often influence poor dietary choices.

## AMY'S ABSENCE IN GRAHAM SWIFT'S LAST ORDERS

**Student: Morey Reinblatt**

Faculty Mentor: Siobhan Brownson, Ph.D.  
Department of English  
(ENGL 310 – Brownson)

This paper uses a psychoanalytical approach to examine Amy Dodd's lack of emotion towards the death of her husband as well as her consequent refusal to carry out his last wishes in Graham Swift's *Last Orders*. I begin by analyzing the initial dynamic between Jack and Amy Dodds and explaining that Amy's decision to marry her husband was based on her unexpected pregnancy and birth of their disabled child, June. Swift initially characterizes Amy as a fragmented individual; the conflict between what she wants to do with her life and what she feels is best for her is a daily struggle that Amy must endure. As a result, Amy Dodds approaches her marriage to Jack reluctantly, and often her behavior throughout *Last Orders* reflects her indifferent attitude towards her husband. I contend that Amy's moment of resolution occurs when Jack requests that she abandon June and continue their marriage as if their daughter was never born. Caught between her maternal need to care for her mute daughter and her obligations to her husband, Amy begins travelling twice-weekly to June's assisted living facility. Furthermore, Swift's purposeful exclusion of Amy during most of the narrative serves as a parallel to Amy's absence from the Dodds' relationship. Jack responds to his wife's neglect by excluding her from his final letter to his friends detailing his last wishes after his death. The paper concludes with a commentary on Amy's final actions in Swift's novel. Rather than assisting Jack's friends in carrying out his last orders, Amy visits June so that she may say goodbye. I argue that Jack's death has liberated Amy's divided psyche and has allowed her to begin making her own decisions towards her life. Graham Swift's choice to end the narrative in Amy's perspective allows the reader to grasp the dual nature of the Dodds' marriage and, likewise, provides insight into Amy's callous exterior.

## ART THERAPY FOR CHILDREN WITH BEHAVIOR PROBLEMS

**Student: Opal Dyson 2011**

Faculty Mentor: Kareema Gray, Ph.D.  
Department of Social Work

Children who present behavior problems are normally misconstrued in society because their behavior can be disruptive within various settings; however, some people may not take the time to understand what those children may be going through. Art therapy is one of many therapeutic tools that can be used to understand children with behavior problems on a deeper level in order to assist in improving the child's behavior. The purpose of this exploratory pilot research study is to explore the profession of art therapy and discover whether this therapeutic tool is affective on children displaying behavior problems. It is anticipated that art therapy is an effective therapeutic method for this vulnerable population. This essay consists of a literature review, methodology, detail of findings, and a discussion section. The literature review section contains background information on children with behavior problems, play therapy, and art therapy. This section will also provide detail on experiments that were previously conducted on children presenting behavior problems. The methodology section contains information on the participants, instruments used, and procedures implemented in this research study. The participants of this study were found through an internet search engine, contacted individually, and asked if they were willing to participate in an online survey. The findings section will detail the results of the answers to the survey questions used with the sample population. The answers are divided into the characteristics of therapy and the effectiveness of art therapy. The discussion section will compare the results of this study to the experiments from the literature review, discuss the limitations of the study, and provide suggestions for further research.

## DESIGN AND SYNTHESIS OF ZONE 2 AND 3 MODIFIED SPHINGOSINE KINASE INHIBITORS

*Supported by the South Carolina IDeA Networks of Biomedical Research Excellence Grant from NIH*

**Student: Ray Olang 2011**

Faculty Mentor: T. Christian Grattan, Ph.D.  
Department of Chemistry, Physics, and Geology

Cancer and the development of more efficient treatments is a major topic in the medical and science fields. In the 2008 annual report on Medicinal Chemistry, the sphingolipid metabolism is recognized as a good starting point for developing cancer treatments. The sphingolipid metabolism plays an important part in cell death or proliferation in cancerous cells. After chemotherapy, the sphingomyelin, which is the initial site of the sphingolipid metabolism pathway, loses its phosphate group and sets up an equilibrium between ceramide which ultimately degrades to sphingosine. Ceramide is ultimately responsible for cell death and sphingosine becomes phosphorylated to produce sphingosine 1-phosphate leads to continued cell growth and proliferation. Normally cells that are defective undergo apoptosis where they die, and therefore can't reproduce more defective cells. Cancerous cells tend to avoid this process shifting the equilibrium toward sphingosine and allowing them to continue on forming sphingosine 1-phosphate where they will eventually become angiogenic. The enzyme that is believed to be responsible for sphingosine phosphorylation is sphingosine kinase 1. There are two isomers of this enzyme, 1 and 2, but sphingosine kinase 1 is the one that has been directly connected with cancer thus far. If this enzyme is inhibited, the equilibrium between ceramide and sphingosine will shift toward ceramide forcing the cells to die instead of replicating. It is important for the inhibitor to be hydrophilic enough to enter the body but not so much that the inhibitor goes through the cell completely. Not only does it have to be hydrophilic but biologically compatible. Our collaborator, Dr. Smith at MUSC, has given us a template molecule from which to work with. This template failed to show oral bioavailability so we will attempt to improve this by derivatizing the template. We have used computational docking and Lipinski's Rule of Five to determine which derivatives would be most successful. The derivative that we have chosen from these experiments has a modified zone 2 and 3. Once complete, the derivative will be sent back to MUSC for bioassay testing and assess its pharmacophoric effects relative to the template compound.

## INVESTIGATING PREFERRED STRUCTURES OF AMYLOID- $\beta$ DIMERS

*Supported by a RUI Grant from the National Science Foundation.*

**Student: Rebecca Mitchum 2012**

Faculty Mentor: Robin Lammi, Ph.D.  
Department of Chemistry, Physics, and Geology

Amyloid- $\beta$  ( $A\beta$ ) is a self-associating protein linked to Alzheimer's disease that is comprised of 39-43 amino acids. Recent research has shown that  $A\beta$  oligomers as small as dimers or trimers are closely related to the disease's progression. Experimentally, little is known about the structures of these oligomers. We have used Förster Resonance Energy Transfer (FRET) between donor- and acceptor-labeled  $A\beta$  peptides to characterize dimer structures, both in bulk solution and in individual, surface-tethered dimers. A comparison study of dimers in the absence and presence of an aggregation inhibitor [ $A\beta$  16-22m, K(NMe-L)V-(NMe-F)(NMe-A)E] was also performed, to determine whether the inhibitor affected the observed FRET efficiencies (EFRET); changes in these values would be indicative of altered dimer structure. We hypothesized that dimers that are not dissociated by the inhibitor may exist in preferred structures with characteristic EFRET values. In the absence of inhibitor, fluorescence lifetime studies of  $A\beta$ ; dimers in bulk solution reveal two ensemble-averaged FRET efficiencies. In the presence of  $A\beta$  16-22m, dimers in bulk solution exhibit only one characteristic FRET efficiency, which may represent one preferred dimer structure. Efforts to confirm this result in single, surface-tethered dimers are ongoing.

**STRUCTURAL DETERMINANTS OF BINDING SPECIFICITY OF BACILLUS SUBTILIS  
XYLANASE C TO 4-O-METHYL-D-GLUCURONOXYLAN**

**Student: T. Cameron Waller 2011**

Faculty Mentor: Jason Hurlbert, Ph.D.  
Department of Chemistry, Physics, and Geology  
(CHEM 551/552 – Grattan)

Unlike fossil fuels, ethanol is a renewable energy source produced through the fermentation of sugars by bacteria. Heteroxytan, a carbohydrate polymer found in the hemicellulose fraction of plants, is an underutilized source of fermentable pentose sugar from hardwoods and crop residues. The primary component of heteroxytan,  $\beta$ -1,4-D-xylan, is periodically substituted with a variety of chemical moieties, including: arabinofuranose, coumaric acid, ferulic acid and 4-O-methyl-D-glucuronic acid (MeGA). Conversion of this polymer to fermentable sugars may be significantly limited by these substitutions. Recently, the family 5 xylanase (xylanases C, XynC) encoded by the *ynfF* gene in *Bacillus subtilis* strain 168 was found to hydrolyze such substituted heteroxytans, forming a mixture of oligomeric xylose products bearing MeGA substitutions on the xylose residue penultimate to the reducing terminus. The exact means by which the enzyme tolerates MeGA substitutions on the substrate during binding is unknown and characterization of the binding and catalytic modes of the enzyme may allow for the design of efficient hybrid enzymes for industrial applications. Insight into these processes can be gained by x-ray crystallographic analysis of the XynC/MeGAX<sub>n</sub> complex. We recently solved the structure of *B. subtilis* xylanase C in complex with xyloglucuronic acid and glucuronic acid and have identified several residues (tyrosines 231, 269 and 274, serine 235 and arginine 272) that may be involved in substrate recognition and/or binding. To define better the role of these residues in the xylanase reaction mechanism, we have begun mutagenic analyses of the protein. We have synthesized plasmids encoding XynC with point mutations of tyrosines 231, 269 and 274 to alanine. We will confirm the sequence of these mutant plasmids and synthesize more for serine 235, and arginine 272 to alanine. We have expressed and purified the tyrosine 269 to alanine mutant protein, and expression and purification of the other four mutant proteins will follow. CocrySTALLIZATION trials of the mutant proteins with glucuronoxylotriose will be initiated in parallel with enzymological studies to determine the kinetic parameters of the mutants for comparison with the wild type XynC.

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