



2013

# Undergraduate Scholarship at Winthrop University 2013 Book of Abstracts

Winthrop University

Undergraduate Research Office, Winthrop University

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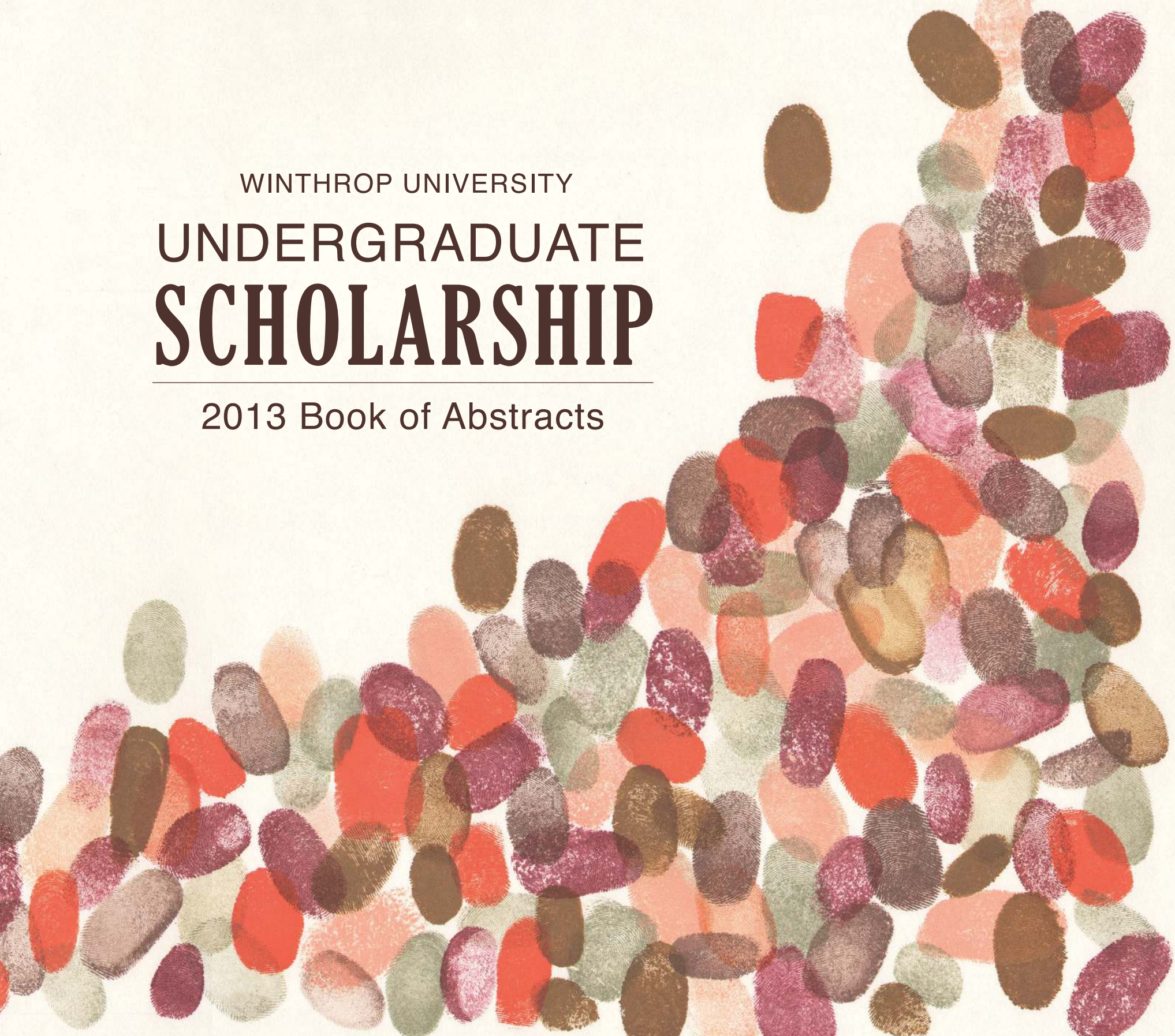
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WINTHROP UNIVERSITY

UNDERGRADUATE  
**SCHOLARSHIP**

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2013 Book of Abstracts



# **“The Highest Function Of The Teacher Consists Not So Much In Imparting Knowledge As In Stimulating The Pupil In Its Love And Pursuit.”**

Henri Frédéric Amiel (1821–1881)  
Swiss philosopher, poet and critic

*Winthrop University proudly presents the second Undergraduate Scholarship at Winthrop University Book of Abstracts.*

University College created this book to present the scholarship occurring throughout all five academic colleges in the university: College of Arts and Sciences (CAS), College of Business Administration (CBA), College of Education (COE), the College of Visual and Performing Arts (CVPA) and University College (UC). In addition to the research abstracts, we are using the book to document the students who have completed Honors Theses, applied for Nationally Competitive Awards, and were selected as McNair or WISE Scholars.

The Book of Abstracts, which contains the work conducted by students in collaboration with their faculty mentors, reflects the great depth and variety of projects these students were engaged in. Their success 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 graduate and professional schools. 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 this work 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 their knowledge and creative activities at a professional level.

The production of the book itself is an undergraduate project: we thank Rhiannon Bode, Heather Prange, and Patrick White, Visual Communication Design majors; and Noah Smith, Digital Information Design major, for composing the book. We also thank Rhiannon Bode, for designing the book's cover. We thank the Undergraduate Research Office's graduate assistant, Patrick Bryant, for editing the abstracts.

We hope you enjoy our Book of Abstracts.

**Dr. Dwight Dimaculangan**  
Director of Undergraduate Research

**Dr. Gloria Jones**  
Dean of University College

Thumbprints are just one of the many characteristics that define us as individuals. We all want to leave our mark on this world in some way and as college students we especially want to be remembered for doing something honorable during our college careers. This book cover is an attempt to allow the students within the book to leave an actual physical mark, in the form of a thumbprint, on the cover.

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# Winthrop University

## Undergraduate Research Initiative

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.

### **University–Wide Undergraduate Research Advisory Committee:**

#### **Dwight Dimaculangan, Ph.D. - Director of Undergraduate Research**

Carol Marchel, Ph.D. - Richard W. Riley College of Education

Ian Pearson, Ph.D. - College of Visual and Performing Arts

Merry Sleight-Ritzer, Ph.D. - College of Arts and Sciences

William Thacker, Ph.D.- College of Business Administration

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Nick Grossoehme, Ph.D. - Chemistry

Teresa Justice - Director of the Sponsored Programs and Research

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Cecile Leung, Ph.D. - Modern Languages

Ameda Manetta, Ph.D. - Social Work

David Meeler, Ph.D. - Philosophy and Religious Studies

Donna Nelson, Ph.D. - Psychology

Joe Rusinko, Ph.D. - Mathematics

Marilyn Sarow, Ph.D. - Mass Communication

William Schulte, Ph.D. - Mass Communication

Jane B. Smith, Ph.D. - Director of the Writing Center

Sarah Stallings, Ph.D. - Associate Dean & Acting Chair of Department of Human Nutrition

Brad Tripp, Ph.D. - Sociology and Anthropology

Kristi Westover, Ph.D. - Biology

# Publication Abstracts

## Agent-Based Fabric Modeling Using Differential Equations

*Published in Community of Ordinary Differential Equations Educators Journal, November, 2012*

**Student: Hannah Swan** (2014) (McNair Scholar)

Faculty Mentor: Joseph Rusinko, Ph.D.

CAS – Department of Mathematics

Using the drape of a circular sheet over a point from its center, we compare meshes that mimic woven fabric structure to one based on the shape of the pattern piece: an arc mesh. We use agent-based modeling software to simulate fabric drape by modifying existing linear differential equations of mass spring systems. We decompose the forces of gravity and Hooke's law into directional components, forming a new nonlinear system of the force in each direction. There are then three differential equations for each mass point, resulting in a system of hundreds of equations for each mesh. Euler's numerical method is coded into the model to solve the system and calculate the new position of each mass point at every time step. Observing the super-elasticity problem, the tendency of springs to stretch farther than fabric, we apply constraints to spring length. We analyze the effect of resolution and bending springs, additional springs connected to every other mass point, on the accuracy and computational time of each simulation. To identify the best mesh geometry, we compare the drape coefficient, a standard measurement for textiles, to an actual fabric drape.

## Childhood Parentification Associated with Negative versus Positive Outcomes in Adulthood

*Published in The Journal of Psychological Inquiry*

**Students: Brittney Black** (2013) (McNair Scholar), **Katharine Lindberg** (2013), and **Alysja Garansi** (2012)

Faculty Mentor: Merry J. Sleight, Ph.D.

CAS – Department of Psychology

(PSYCH 302 – Sleight)

Childhood parentification has been linked to many negative outcomes in adulthood and few positive outcomes. The goal of this study was to further explore whether specific types of parentification link to positive outcomes not investigated in previous research. Participants (30 men and 70 women) completed the Parentification Questionnaire and responded to a series of positive and negative statements by indicating how much the statement described them. Results revealed that all three aspects of parentification (instrumental, emotional, and perceived unfairness) were associated exclusively with adverse outcomes. However, emotional parentification and perceived unfairness were linked to many more adverse outcomes than was instrumental parentification. These findings suggest that children who take on adult responsibilities are vulnerable to negative outcomes in adulthood such as negative self-perceptions, loneliness, and anxiety.

## Synthesis of Tetrahydroxybiphenyls and Tetrahydroxyterphenyls and Their Evaluation as Amyloid-Beta Aggregation Inhibitors

*Published in Bioorganic & Medicinal Chemistry Letters, Vol. 23, 1703-06, 2013*

*Supported by an SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)*

**Student: Craig Stevens** (2013)

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

CAS – Department of Chemistry, Physics and Geology

3,3',4,4'-Tetrahydroxybiphenyl and three isomeric 3,3'',4,4''-tetrahydroxyterphenyls with varying geometries around the central phenyl ring have been synthesized and evaluated for their in vitro activity against aggregation of Alzheimer's amyloid-beta peptide (Abeta). Results from Congo red spectral-shift assays reveal that all four compounds successfully inhibit association of Abeta monomers. For the tetrahydroxyterphenyls, efficacy varies with linker geometry: the ortho-arrangement affords the most successful inhibition and the para-geometry the least, perhaps due to differing abilities of these compounds to bind Abeta. Of the four small molecules studied, 3,3',4,4'-tetrahydroxybiphenyl is the most effective inhibitor, reducing Abeta aggregation by 50 percent when present in stoichiometric concentrations.

# Honors Thesis Abstracts

The Honors Program at Winthrop University is designed to enrich the college experience for highly talented and motivated students. Through interactions with outstanding faculty and peers, a vital community of scholars is created that embraces the pursuit of knowledge for the enhancement of intellectual and personal growth. Founded in 1960, Winthrop’s Honors Program is one of the oldest in the nation. Then President Charles S. Davis, realizing the importance of an enriched education for high-achieving students, appointed faculty member John S. Eells as the founding director of our Honors Program. Eells became a member of a national organization that was formed as a clearinghouse for information on honors activities, the Inter-University Committee on the Superior Student (ICSS). The ICSS received funding from the Carnegie Foundation, the National Science Foundation and the U.S. Office of Education to help establish honors programs at colleges and university across the U.S. When the ICSS disbanded in 1965 for lack of external funding, several members of that group formed the National Collegiate Honors Council (NCHC), in 1966, which was committed to maintaining a professional association of honors educators. Eells was elected the fourth President of NCHC in 1970. Over the years, the Winthrop University Honors Program has continued to flourish, and in the early 1980s the program was divided into a program for the entering freshmen and a program for the upperclassmen. At that time, there was a national trend toward creating “learning communities” (see Gabelnick, 1986, for a review), and the Winthrop honors administration created the Clustered Learning Units for Educational Success (C.L.U.E.S) program in which new honors freshmen enrolled in a cluster of three honors classes together. This program later became the Freshman Honors Program. Seeing the need for a more cohesive honors experience, the honors administration under the leadership of Anthony J. DiGiorgio combined the programs in 1997. Today the Honors Program at Winthrop University enrolls approximately 200 students from each of the degree granting colleges of the university. To graduate with an Honors Program Degree, a student must complete 23 hours of honors courses, which includes an honors thesis while maintaining at least a 3.30 grade point average. The honors thesis is the culminating experience for our Honors Program students in which they work collaboratively with a faculty director and two faculty readers to produce a project that evaluates knowledge, concepts and methodology, examines major issues, integrates complex information, and develops and appropriately defends an argument. While most students complete the honors thesis during the course of the senior year, some students complete the project earlier in their academic careers. The Honors Thesis Colloquium is an annual event designed as a venue for the student to celebrate this accomplishment. Now in its twelfth year, this year’s colloquium will showcase sixteen students presenting their honors thesis research in the form of an oral presentation or poster.

The Honors Program students and I would like to thank the faculty members who have worked as honors thesis directors or readers throughout this process. Their expertise, guidance and commitment should be highly commended on this auspicious occasion.

## Kathy A. Lyon, Ph.D.

Director of the Honors Program

### 2012-2013 Honors Advisory Committee

### 2012–2013 Honors Advisory Committee

Kathy A. Lyon, Ph.D., Chair, Psychology

Eric Birgbauer, Ph.D., Biology

Chia-Lan Change, Ph.D., History

Robin Lammi, Ph.D., Chemistry

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Diana Murdock, Ph.D., Early Childhood Education

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Kristen Wonderlich, M.A., Music

Peter Judge, Ph.D., ex-officio, Enterim Dean of Arts & Sciences

Gloria G. Jones, Ph.D. ex-officio, Dean of University College

Leslie Bickford, Ph.D., ex-officio, Director of ONCA

### “Bread, Freedom, and Social Justice:” The Global Justice Movement and the Arab Spring

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Judson Abraham** (2013)

Honors Thesis Committee: Jennifer Leigh Disney, Ph.D.; Stephen Smith, Ph.D.; and Chris Van Aller, Ph.D.

CAS – Department of Political Science

In this paper, I will outline the Global Justice Movement’s influence on the Arab Spring. The Global Justice Movement (GJM), which characterizes post-Soviet leftist organizing, challenges the dominant neoliberal social and economic paradigm by emphasizing freedom of information and transparency, harmony with the earth and democratic control of natural resources, participatory democracy, transnational solidarity between oppressed groups, and opposition to financial globalization. The GJM stands apart from traditional radical organizing because its advocates promote loose activist networks rather than centralized party operations and formal, institutionalized politics. I will detail the GJM’s contribution to the contemporary Arab revolutionaries’ self-understanding in three different arenas: their rejection of neoliberal financial institutions, which Arab activists fight via their demands for food security in light of massive commodity inflation caused by IMF-inspired reforms across the region; their use of the Internet, which involved the participation of such entities as Anonymous, WikiLeaks, and the April Sixth Youth Movement, all of which embrace the GJM’s pursuit of transparency and web freedom; and their opposition to US and Israeli military hegemony, two of the GJM’s foundational issues. By demonstrating the Arab Spring’s connection to the GJM, I hope to debunk some mainstream accounts of the Arab uprising, which unfortunately tend to credit corporations like Google and Facebook and American-backed institutions like the National Endowment for Democracy for the protests’ success.

### Preparation of Carbolines via Cyclization of 3-(2-Aminoaryl)Pyridine N-Oxides

*Presented at the 245<sup>th</sup> ACS National Meeting and Exposition, New Orleans, April, 2013; and the Southern Regional Honors Council Conference, April 2013*

*Supported by grants from the National Center for Research Resources, the National Institute of General Medical Sciences, and the NIH*

**Student: Chelsea Brennan** (2013)

Honors Thesis Committee: James M. Hanna, Ph.D.; Aaron Hartel, Ph.D.; and Jason Hurlbert, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Carbolines are medicinally important compounds, as they can have antimicrobial, antifungal, antitumor, and anticancer properties, among others. Recently, researchers in the Hanna laboratory reported the cyclization of 3-acylpyridine N-oxide tosylhydrazones, and it was hoped that the application of this strategy to the cyclization of 3-(2-aminoaryl)pyridinium salts and 3-(2-aminoaryl)pyridine N-oxides could provide a versatile synthesis of compounds related to the carbolines. The first step in the synthesis, tosylation of the aniline, has been performed under reflux with dichloromethane as a solvent and N-methylimidazole as a base, and afforded a 94 percent yield. The second step has proven more difficult. In this step, using PdCl<sub>2</sub>(dppf) as a catalyst in dioxane/H<sub>2</sub>O, resulted in a yield of only 25 percent. Changing the solvents to ethanol and H<sub>2</sub>O and using microwave heating has improved the yield to 60 percent. The biaryl product will now be produced on a larger scale, then the pyridinyl nitrogen will be oxygenated; subsequent ring closure will give the carboline substructure.

Alternatively, the pyridinyl nitrogen can be methylated before ring closure is performed to give the N-methyl carbolines. Upon optimization of the cyclization conditions, a scope and limitations study varying the substituents on both the carbocyclic and pyridinium portions of the molecule will be carried out.

### Antimicrobial Properties of Andropogon Glomeratus on Selected Bacteria Strains

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Dane Flinchum** (2013)

Honors Thesis Committee: Victoria Frost, Ph.D.;William Rogers, Ph.D.; and Casey Cothran, Ph.D.

CAS – Department of Biology

The Catawba Indians of South Carolina have used the plant called the Bushy Bluestem (*Andropogon glomeratus*) as an eyewash and anti-malaria tonic for many years. The purpose of this research was to examine the possible antimicrobial activity of acetone, ethanol and aqueous extracts of *Andropogon glomeratus* on selected bacteria strains using the disc diffusion method. The stem and roots of the plant were ground up and the crude extract obtained by dissolving them in the chosen solution followed by concentration and rotary evaporation. Small volumes of the extract of differing concentrations were dripped onto sterile paper discs and placed on agar plates seeded with the selected bacteria. Experiments were done in triplicate, and zones of inhibition were measured and compared to the inhibitory activity of known antimicrobial agents as well as negative controls in order to discover whether the Bushy Bluestem had a significant effect on the growth of the bacteria tested.

### Hard-Pressed Candy

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Griffin Glaze** (2013)

Honors Thesis Committee: David Barringer; Jason Tselentis, M.F.A.; and Kathy Lyon, Ph.D.

CVPA – Department of Design

(VCOM 487H – Barringer)

For my senior thesis, I will be creating my own brand of candy. This will involve making the candy, packaging the candy, branding it, and then selling it or giving it away. The name of my thesis is “Hard-pressed Candy.” The sweets will have answers written on them on the outside for yes or no questions. The consumers will unwrap the candy after asking it a question, like they would with a Magic Eight ball. The name Hard-pressed comes from the idiom of a person being “hard-pressed” for an answer as well as the fact that the answers are actually pressed into the hard candy. There will be different forms of the candy with different kinds of answers as well as different packaging. I will conduct research on similar sweets that are in the market as well as designs that will potentially influence my packaging and branding designs. I also plan to write a short essay on how companies use advertising to influence consumers.

### The Non-Traditional Student and Definitions of “Merit” and “Risk”

*Presented at the American Education Finance and Policy 38<sup>th</sup> Annual Conference, March, 2013*

**Student: Mary Glenn** (2013)

Honors Thesis Committee: Laura Ullrich, Ph.D.; Robert Stonebraker, Ph.D.; and Gary Stone, Ph.D.

CBA – Department of Accounting, Finance and Economics

Non-traditional students have become an increasingly large portion of the secondary education population in the last decade. These students face unique burdens in the secondary school system, including being independent, raising children, and/or having full-time jobs. In addition to these burdens, they sometimes face the added obstacle of a lack of merit aid, as most aid is directed towards traditional students. As college tuitions continue to increase in real terms and college degrees become increasingly desired in job candidates, these demographics are at a distinct disadvantage economically. In order to determine the difference in GPA and merit aid between traditional and non-traditional students, we performed ordinary least squares analyses using the National Center for Education Statistics Beginning Postsecondary Longitudinal Study restricted-use dataset. The data used are from the 2003-09 wave of the survey and provides a sample of 4,937 students. Results show that, after controlling for demographic, social, and academic characteristics, being a “high risk” student still significantly decreases the amount of merit aid that a student receives, while “high risk” status decreases GPA outcome minutely. The analyses beg the question: If these students are performing in a similar manner to traditional “non-risky” students, why are they being given lower levels of aid? And, further, if their performance is similar to the performance of other students, should they be considered “at risk” at all?

### Academic Redshirting

**Student: Anna Johnson** (2012)

Honors Thesis Committee: Laura Ullrich, Ph.D.; Robert Stonebraker, Ph.D.; and Evelyn Weeks

CBA – Department of Accounting, Finance, and Economics

(ECON 495 – Ullrich)

In the past few decades, the practice of “academic redshirting” has become increasingly popular among parents. Parents are somewhat commonly choosing to delay their child’s entrance into kindergarten in order to give the child the advantage of being older than all the other children in the class. Parents claim this technique offers social, athletic, and academic advantages to their children. This may include the availability of more leadership opportunities, being taller and stronger on sports teams, and achieving higher test scores. Our analysis uses data on college entrants to examine the long-term effects of both early and late graduation from high school to see if students who graduate earlier or later than the typical student are more likely to graduate 'on time' with a bachelor’s degree and/or have higher incomes six years after first entering college. Data from the NCEES Beginning Postsecondary Survey are utilized in the analyses. Results indicate that there is no statistically significant change in the likelihood of obtaining a bachelor’s degree on time or the level of income earned based on graduating high school earlier or later than would be typically expected. This result may indicate that the academic advantage of ‘redshirting’ is not as strong as some might think and may not lead to future incomes high enough to make up for the amount of income lost by delaying graduation by one year.

### Relation between Childhood Parentification and Adult Patterns of Co-Dependency

*Presented at the Southern Regional Honors Council Conference, April, 2013 and at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

*Supported by the CEPO/Psi Chi Undergraduate Research Program*

**Student: Katharine E. Lindberg** (2013)

Honors Thesis Committee: Merry J. Sleight, Ph.D.; Donna Nelson, Ph.D.; and Tara Collins, Ph.D.

CAS – Department of Psychology

Instrumental parentification occurs when children take on adult responsibilities that are not age appropriate, and emotional parentification occurs when children take on the responsibility for providing an adult-level of emotional support to family members (Jurkovic, Thirkfield, & Morrell, 2001). The purpose of this study was to test the hypothesis that childhood parentification would predict higher levels of co-dependency in adulthood, an issue that has yet to be investigated. Participants were 196 young adults with a mean age of 20.96 (sd = 4.83). Participants responded to an online survey that included the Parentification Questionnaire (Hooper & Wallace, 2010) and the Co-Dependency Scale (Marks, Blore, Hine, & Dear, 2011). Results revealed that all four elements of co-dependency were positively correlated with perceived unfairness and emotional parentification ( $p < .01$  in all cases). Participants higher in perceived unfairness and emotional parentification were also more likely to agree that they have at least one co-dependent relationship and that they have spent time in therapy ( $p < .05$  in all cases), suggesting a link to unhealthy relationships and an awareness of them in adulthood. The higher the participants perceived unfairness or emotional parentification score, the harder the participants felt it was to rely on others and the more loneliness they reported ( $p < .05$  in all cases). These findings stand alongside their higher co-dependency scores, suggesting that these individuals want the connection with others but do not necessarily trust it or find it comforting based on their prior experiences. In contrast, instrumental parentification was only associated with the co-dependency element of interpersonal control. The higher the instrumental parentification, the more participants had a need to exert influence over others in their life,  $r = .16$ ,  $p < .05$ . Instrumental parentification is the variable least related to relational issues; it therefore makes sense that this particular form of parentification is not a predictor of overall relational co-dependency but does relate to a desire to control the local environment. In conclusion, these findings add to our current understanding of parentification by demonstrating a connection between childhood parentification and co-dependency in adulthood.

### “The Glorious Lady of My Mind”: Beatrice as Savior in Dante’s Divine Comedy and Lemony Snicket’s A Series of Unfortunate Events

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Ashley Moore** (2014)

Honors Thesis Committee: Casey Cothran, Ph.D.; Robert Prickett, Ph.D. and Leslie Bickford, Ph.D.

CAS – Department of Art English

Beatrice Portinari, Dante Alighieri’s well-known lost love and personal muse, has been studied for centuries as both a guide and savior figure within Dante’s works, particularly his *Divine Comedy*. In Lemony Snicket’s *A Series of Unfortunate Events*, a very different Beatrice leads a very different author through his own quest for salvation. I plan to explore Snicket’s use of the author as a character within the work as well as his use of Beatrice as a guide and savior figure throughout his book series. In the *Unfortunate Events* series, the reader knows

and understands very little about the mysterious Beatrice whom Snicket dedicates each volume to; this is much in contrast to Dante’s Beatrice, whom the reader becomes very familiar with throughout the *Divine Comedy*. As I explore the various differences between the two Beatrices in these works, I will reveal uncanny similarities between the two and ultimately uncover the significance of Snicket’s unique reinterpretation of the author’s personal search for redemption. I will use academic research on both the *Divine Comedy* and the *Unfortunate Events* series as well as on Beatrice Portinari herself in order to examine the role of a muse and guide within the two respective works. I plan to compare and contrast the two Beatrice figures with further exploration of Snicket’s elusive Beatrice and her significance.

### An Artificial Neural Network Modeling the Humor Response

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Matthew Neal** (2013)

Honors Thesis Committee: Zach Abernathy, Ph.D.; Joe Rusinko, Ph.D.; and Trent Kull, Ph.D.

CAS – Department of Mathematics

(MATH 450H – Abernathy)

An artificial neural network is a mathematical model in which connected nodes on a graph represent interconnected biological neurons in the brain. The neuron’s state is determined by a function of the edge weights, where edge weights of the graph correspond to strengths of interactions between neurons. To simulate learning, the weights of these edges can be trained to a set of user-provided test data. We develop an artificial neural network modeling mental function during joke interpretation by using a multi-class perceptron, with inputs corresponding to components of a joke and outputs representing ideas present in the joke-recipient’s subconscious. To model a humorous effect, we train the network’s input away from an output associated with the joke’s punch-line, and then test if a joke’s punch-line can be successfully interpreted.

### Hazard Analysis of the Chaco Canyon Drought and Anasazi Society:

#### A Bioarchaeological Approach

**Student: Andrew Niswander** (2013)

Honors Thesis Committee: Janice Chism, Ph.D.; Jessica Boulware.; and Christina Brooks, Ph.D.

CAS – Department of Biology

The deceased do not accurately depict the living of their times, as several (let alone one) deceased person(s) do not represent a random sample of those at a particular place and time. By examining mortalities from catastrophic events, which, theoretically, do not discriminate amongst age, sex, health, and other such differences, a better representation of the people of a society in history can be revealed. The method of hazard analysis discerns whether or not a catastrophic event resulted in truly unbiased mortality. The Chaco Canyon drought of the twelfth century resulted in the absence of the Anasazi peoples in the region by A.D. 1300. Examining pre-existing data age-at-death distributions of Anasazi who died during the drought would indicate whether or not the drought resulted in unbiased mortality. This research focuses on performing hazard analysis comparing the remains of male and female Anasazi to determine if social inequality surrounding the sex of an individual influenced the risk of death at particular ages during the drought.

### The Population Genetics of the Greenfin Shiner (*Cyprinella chloristia*)

*Supported by a Winthrop University Research Council Grant*

**Student: Joshua Owens** (2013)

Honors Thesis Committee: William Rogers, Ph.D.; Kim Wilson, Ed.D.; and Kristi Westover, Ph.D.

CAS – Department of Biology

There are approximately 160 species of fish from 28 families in the freshwaters of South Carolina, with nearly 40 percent from the family Cyprinidae, commonly referred to as the true minnows. Cyprinids constitute the largest family of fish in the world, and with nearly 2,400 species known worldwide, they show extraordinary genetic diversity. Perhaps the most remarkable trait of this family, and also a main reason for the large number of species, is the minnows’ ability to evolve rapidly and adapt to new environments. This capacity, known as adaptive radiation, is thought to result from several factors, including the minnows’ relatively short life cycles and their shallow habitats, which experience drastic environmental changes over very short periods of time. As a result, these fish undergo selective pressures that could help us measure evolutionary changes occurring over brief time frames, perhaps a matter of decades or less. Studying species currently experiencing rapid evolution offers us extraordinary insight into the workings of speciation. Many studies have focused on the adaptive radiation of the Cyprinids to discover the evolutionary relationships between the members of the family. Each investigation analyzed some combination of the cytochrome b gene, cytochrome c gene, RAG 1 gene, or ND genes, all of which are crucial for mitochondrial health. Such genes are critical for the survival of the organism, and changes between populations in their makeup should be few. Thus, any unexpectedly high variation in these types of genes between populations would likely indicate not separate populations but actually different species. We plan to genetically analyze the Satinfin Shiner (*cyprinella analostana*) and the Greenfin Shiner (*cyprinella chlorista*), two closely related fish that live throughout South Carolina. Based on previous field work, it is clear that either A. the Greenfin Shiner shows more variability than is typical of other Cyprinids, B. the Greenfin Shiner hybridizes with the Satinfin Shiner, or C. the Greenfin Shiner is actually two species that are difficult to distinguish. We will isolate, amplify, and sequence specific regions of their genomes in order to detect variations whose patterns will help us resolve questions about the actual number of species that is/are presently called the Greenfin Shiner.

### Bringing Sexy Back: The Politics of Rape Culture and Its Effects on Collegiate Women

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Colleen Rice** (2013)

Honors Thesis Committee: Scott Huffmon, Ph.D.; Michael Lipscomb, Ph.D.; and Jennifer Disney, Ph.D.

CAS – Department of Political Science

I will research the multi-dimensional issue of sexual assault and violence within American culture, especially in regards to its presence on college campuses. Women are at their highest risk of being assaulted within the first six weeks of beginning college, and roughly one in four women report having been assaulted during their undergraduate career. At the basic level, I will explore the current policy surrounding rape and sexual assault at the national, state, and local level, then examine the language of such law and compare it to popular culture’s language regarding sex. I will additionally research methods of cultural change and offer previous instances of change within the last century. From those findings, I will propose a new way of handling sexual assault and rape on college campuses, focusing on the importance of a change in culture and language for policy to effectively make a difference.



## Of Comics and Men: Graphic Novels as Literary Works and Proposed

### Uses in Classrooms

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Chelsea Slessman** (2014)

Honors Thesis Committee: Robert Prickett, Ph.D.; Josephine Koster, Ph.D.; and Leslie Bickford, Ph.D

CAS – Department of English

When people see graphic novels all they focus on is how childish it looks. My research and paper will refute this claim, showing that graphic novels are incredibly literary. The use of effects like symbolism and artistic panels in graphic novels like *The Sandman* series by Neil Gaiman and *Anya’s Ghost* by Vera Brosgol, among others, allows the reader to see the visual importance in each scene. With this, graphic novels can be used in secondary classrooms to help readers who might not be able to read a piece of work in just plain text. Graphic novels are not just picture books. They are a source of literature that is currently underrated, typically for the fact that they have pictures in them.

## Du Lieber: A Screenplay of Riddles, Lies, Sex, Crime, and Mother Goose Rhymes

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Mirielle Smith** (2013)

Honors Thesis Committee: Casey Cothran, Ph.D.; Evelyn Weeks; and Annie-Laurie Wheat

CAS – Department of English

"Old Mother Goose when she wanted to wander would ride through the air on a very fine gander." The canon of Mother Goose rhymes is a loose, ill-defined set of rhymes that has nonetheless been an important and recognizable part of Western collective culture. I will discuss an adaptation of Bruno Bettelheim’s theory of fairy tales’ psychological importance to people at various ages and Jack Zipes’s thoughts on the necessity of continual fairy tale adaptations in regards to the construction of my screenplay, which riffs on and re-appropriates a variety of Mother Goose rhymes dating back to the early nineteenth century. An example of how multiple rhymes combine to form new characters and situations in the screenplay and a short trailer of the film will be presented.

## The Constitutionality and Economic Impact of Sunday Laws in South Carolina

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Travis Whisenant** (2013)

Honors Thesis Committee: Scott Huffmon, Ph.D.; Michael Lipscomb, Ph.D.; and Adolphus Belk, Ph.D.

CAS – Department of Political Science

(PLSC 321 – Belk, and PLSC 202 – Holder)

This paper will analyze two issues surrounding Sunday Laws in the United States, with a particular focus on South Carolina. The first issue will center on the constitutionality of Sunday Laws in the United States, and will chronicle the debate as it has evolved through time. Sunday Laws, by their nature, are heavily associated with Christian religious practices, and their constitutionality under the first amendment has often been challenged. Secondly, the paper will analyze the economic impact of Sunday Laws in South Carolina, while taking into account those factors that may oppose the repeal of such laws and the issues associated with

implementing such a policy. As Sunday has become increasingly commercialized, many Sunday Laws have been repealed. South Carolina has followed this trend by enacting two statutes that provide for Sunday Law exemptions - S. C. 53-1-150 and S. C. 53-1-160. By comparing the percentage of tax income from consumption taxes between counties that have been impacted by the exemptions to their previous tax income from consumption tax, the paper will show that there exist no significant difference in the economic impact of Sunday Laws on counties, making the economic argument for repealing Sunday Laws circumstantial at best. The paper then concludes with a look at the various reasons for this lack of variation between the counties and obstacles to repealing Sunday Laws in South Carolina, with emphasis on human behavior and religious beliefs found in South Carolina.

## Solving Implementation Concerns of Serious Gaming through an Integrated Web Platform

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Samuel Whitley** (2013)

Honors Thesis Committee: James McKim, Ph.D.; Xusheng Wang, Ph.D.; and Kathryn Miller

CBA – Department of Computer Science and Quantitative Methods

“Serious games” is the term for computer games that are used for any non-entertainment purpose, such as instruction or training. Though there has been considerable research on the potential of serious games as learning tools, there are significant hurdles to overcome implementing them in public school settings. In order to succeed, serious games must have low development costs, functionality across a wide variety of platforms, and allow instructors to influence their content. Modern web technologies, such as those related to HTML5, could be the answer to mitigating the problems with integrating serious games into an educational environment.

# Meeting Abstracts

## The Right to Sit: Symbolic Express and the Pledge of Allegiance in New York and New Jersey Public Schools, 1969-78

*Presented at the 2012 Winthrop McNair Summer Research Symposium, July, 2012 and the 20th Annual McNair Scholars Research Conference at the University of Maryland Baltimore County, September, 2012*

**Student: Aaron Fountain** (2014) (**McNair Scholar**)

Faculty Mentor: Andy Doyle, Ph.D.

CAS – Department of History

(MCNR 300 – Fortner-Wood)

Between 1969 and 1978, several middle and high school students in New York and New Jersey sat during the Pledge of Allegiance as a form of political protest. They argued that the line “liberty and justice for all” was hypocritical because it denied the presence of widespread racial discrimination throughout society. They were suspended for their actions and seek legal assistants from the American Civil Liberties Union. Although school authorities violated a series of legal precedents by punishing them, the students generally prevailed in federal and state courts. Based in part on interviews with key figures in the cases, this paper places these protests in the context of the social and political environment of the late 1960s and 1970s.

## Facing the Lion: Orlando’s Transformation in “As You Like It”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Laura-Leigh Todd** (2014)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

Through a process of transformation, Shakespeare’s Orlando in *As You Like It* overcomes his initial social position and lack of education in order to become worthy of Rosalind. Previous scholarship by Louis Montrose and Thomas Kelly touches on the character’s transformation but does not sufficiently explore the pivotal scene in which he saves his cruel brother Oliver from the snake and the lioness. My thesis is that this scene proves crucial to marrying Rosalind because, by achieving moral excellence, Orlando becomes worthy of her and overcomes their social and psychological obstacles. In the course of the play, he journeys from initial physical combat with the wrestler Charles, to a nonviolent confrontation with his future father-in-law, Duke Senior, to forgiveness in the key scene. By protecting his antagonist, Orlando learns to solve problems by means other than violence, brings harmony out of discord, and shows himself fit for marriage to a princess. Thus, examining the snake and the lioness symbolically illuminates Orlando’s individuation and shows how he transcends impediments to become dominant in his relationships with his brother and, more importantly, with Rosalind.

## When Anima Met Animus: A Jungian Analysis of the Macbeths

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Joseph Giordano** (2013)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

As theories in psychology developed in the past century, many characters of William Shakespeare’s works have been psychoanalyzed, drawing multiple interpretations. In *Macbeth*, for example, the Jungian terms of anima and animus can be applied to Macbeth and Lady Macbeth. At issue, however, is the unknown causation of the characters’ abnormal behavior, murderous actions, and dark motivations in the first two acts that ultimately lead to their downfall. Some Shakespearian critics specializing in psychoanalytical theory have loosely applied the Jungian terms of anima and animus to the Macbeths. For example, in *Psyche and Symbol in Shakespeare*, Alex Aronson argues that Shakespeare’s plays can be interpreted through Carl Jung’s theory of archetypes, which includes the anima and animus of *Macbeth*. My thesis is that Jung’s psychological theory of anima/animus possession enables a strong evaluation of the Macbeths, because certain passages in *Macbeth* reveal the unconscious as an overriding force. My research is primarily based on *The Collected Works of C. G. Jung*. Examining Jungian passages leads to a better comprehension of major concepts and thus a better application to *Macbeth*. For example, Jung’s concept of animus possession explains the actions and dominating behavior of Lady Macbeth in the first act. Due to her animus possession, Macbeth’s anima begins to surface because his “ideal” feminine image is not realized in his wife. Because the Macbeths undergo an animus /anima possession due to a lack of recognition, they fail to reach individuation; they instead experience mental disintegration and tragedy. These psychological concepts explain the couple’s actions and impulses: Macbeth yields to the anima while Lady Macbeth dominates with her animus. The resulting effect of this psychological role-swapping is tragic to the couple; Macbeth’s constant paranoia leads to murder and his inevitable downfall, and Lady Macbeth is consumed by her repressed guilt, which leads to her suicide.

## Ophelia’s Flowers in “Hamlet”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Andra Mack** (2013)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

Literary authors sometimes use flowers to enhance symbolic meaning in ceremonies, rituals, and personal relationships. That is the case in act 4, scene 5 of *Hamlet*, when Ophelia uses her mad rant about flowers to convey a message to the other characters and to the audience. Previous critics, like Painter and Parker, acknowledge that the flowers had sexual significance (abortifacient properties) for Shakespeare’s original audience. James Persoon recognizes that they signify the “bruising” that Ophelia suffers at the hands of Hamlet. And Elaine Showalter touches on Ophelia’s “deflowering.” But while these readings acknowledge the flowers’ significance to Ophelia’s psychological decline, no one has explored the full thematic implications of their sexual appearance. My thesis is that the flowers in Ophelia’s bouquet were chosen specifically to make a visual argument that she and Hamlet had had a sexual relationship.

In other words, like her father, this paper will “by indirections find directions out” (2.1.67). Using images of rosemary, pansy, daisy, violet, and the long purples, I suggest that Ophelia uses her flowers like a suicide note to tell the other characters and the audience about her seemingly hopeless situation. This type of visual reading thus provides an aid to the modern reader, for whom horticulture may be a lost art.

#### “My Poor Fool”: The Doubling of Cordelia and the Fool in “King Lear”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Lauren Mixon** (2014)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

This paper argues that the themes of wisdom and folly are constructed and strengthened through the metatheatric doubling of Cordelia and the Fool in *King Lear*. Previously, Richard Abrams, in “The Double Casting of Cordelia and Lear’s Fool: A Theatrical View,” explored their relations to Lear’s third truth-teller, Kent, and the benefits of the audience’s awareness of the actors’ change. In the same spirit, I explore how the audience’s awareness of doubling enhances the thematic elements in which truth and honesty become foolish in a world that has been corrupted. My thesis, however, diverges from Abrams’s project by proposing how doubling is used metatheatrically in order to convey the important similarities between Cordelia and the Fool, which suggest how the foolish may indeed be the wisest and least corrupt characters in the play. In other words, the doubling of these characters reinforces the motif of wise foolishness. By working backwards to determine doubling’s probability and by drawing connections that support the development of wisdom-as-folly, the paper demonstrates the power of metatheatric doubling to enhance meaning in *King Lear*.

#### Archetypal Possession in “King Lear”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Alison Kanski** (2014)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

The characters in William Shakespeare’s *King Lear* present an interesting study in masculine and feminine traits. King Lear has markedly feminine traits, while his daughters, Regan and Goneril, have many masculine traits. This paper addresses the extraordinary power of the characters’ unconscious by arguing that Regan and Goneril’s masculine traits and Lear’s feminine traits arise respectively from possession by the Jungian archetypes of animus and anima. It is this possession that moves the action toward tragedy. Previous Jungian critics of *King Lear* have touched on the role of these archetypes. For example, H. R. Coursen writes about Lear in relation to the anima in his book *The Compensatory Psyche: a Jungian Approach to Shakespeare*. But these critics have left unexplored Jung’s statements about possession. On the one hand, anima possession accounts for Lear’s erratic and emotional behavior, as well as his projection of negative traits onto others. However, he begins the process of individuation after meeting with his shadow on the heath and embracing his anima with Cordelia’s return

from France. On the other hand, Regan and Goneril’s sadism indicates animus possession. The sisters shed their femininity and turn off all emotion in order to gain power. This unwavering desire to dominate leads to their deaths. Unlike Lear, Regan and Goneril never approach any sort of individuation.

#### Bottom’s Climb to Self-Actualization in Terms of Maslow’s Hierarchy of Needs

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Molly Holoubek** (2014)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

What is the nature of Bottom’s psychological development in Shakespeare’s *A Midsummer Night’s Dream*? Previous studies (for example, those by John Palmer, Faith Nostbakken, and Weston Gui) have considered the character in terms of dream analysis and Freudian psychology. Bottom’s relation to Maslow’s hierarchy of needs, however, remains unexplored. This paper suggests that Titania helps Bottom attain both the love/belonging and esteem stages of Maslow’s hierarchy of needs, as well as some characteristics of the self-actualization stage. Early in the play, Bottom’s basic needs for food and shelter are already satisfied, and his later interaction with the other “mechanicals” satisfies the next stage, love/belonging. His erotic interaction with the Fairy Queen and her minions not only reinforces these previous stages but also helps him achieve the esteem level. As a result of his overall experience in the woods, Bottom develops the self-confidence that characterizes the self-actualization stage; however, his performance as Pyramus in the mechanicals’ play within the play suggests a deep desire for recognition and thus an ongoing need for self-discovery.

#### Portia’s Manipulation in “The Merchant of Venice”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Hollie Sierra** (2013)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

How should we interpret Shakespeare’s Portia in *The Merchant of Venice*? In particular, when she lectures Shylock on mercy, is she being straightforward, manipulative, or a combination of both? Some critics consider Portia to be Shakespeare’s ideal female, while others take a darker view. For example, R. Chris Hassell sees an undertone of manipulation in her mercy speech, though he considers her an otherwise admirable character. Thomas Bilello believes that Portia is manipulative. Harshes of all, Steven Marx calls her “canny and conniving” and notes that her actions contradict her statements. My thesis aligns more with the darker view of the character: Portia’s sincerity is superficial, and underneath her masquerade lies a master of craftiness. By examining her biblical allusions and by referencing her other actions throughout the play, this paper presents a preponderance of evidence for Portia-as-manipulatrix. Thus her plea for mercy, though genuine, actually shores up Shylock’s resistance. In conclusion, her speech participates in a pattern of craftiness that subtly but seriously qualifies a view of Portia as Shakespeare’s ideal woman.

#### By the Hand of a Woman: Judith in Baroque Painting

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Layola Morgan McGee** (2014)

Faculty Mentor: Laura Dufresne, Ph.D.

CVPA – Department of Fine Arts

(ARTH 346 – Dufresne)

Judith, the heroine of her eponymous biblical book, was a favorite subject of artists and art clients during the Renaissance and Baroque periods. The violence and sexual elements of her story, however, made her a complex ideological subject; she was called upon to represent chastity and fortitude, while at the same time, she was often used to demonstrate the (inherently bad) nature of women and was portrayed as a villainess or femme fatale. This paper explores depictions of Judith from the Baroque period, examining Baroque artists’ iconographic and stylistic choices, such as the depiction of Judith’s maidservant, the amount of violence depicted in the work, and the characterization of Judith herself. The research draws from several scholarly books and articles, as well as visual analysis of paintings by Baroque artists, including Caravaggio, Artemisia Gentileschi, and Cristofano Allori. Examination of these paintings demonstrates the difficulties the Judith story poses to interpreters and offers an insight into the differing views of virtue and womanhood present in seventeenth-century Europe.

#### Gloucester’s Blind Side

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Chelsea Bergmann** (2015)

Faculty Mentor: Matthew Fike, Ph.D.

CAS – Department of English

(ENGL 305 – Fike)

This paper discusses the role of Edgar and the imagination in Gloucester’s transformation at the supposed White Cliffs of Dover in act 4, scene 6 of Shakespeare’s *King Lear*. There has been very little discussion of the imagination in connection with the scene. W. F. Blissett focuses on the role of “recognition” in the scene’s irony; Jay L. Halio highlights Edgar as a “minister” whose “risky” behavior facilitates his father’s transformation; and Jonathan Goldberg explores Gloucester’s own reactions to his supposed fall from the cliffs. My thesis offers a slightly different emphasis: Through Edgar as an agent of the imagination, Gloucester overcomes his despair and sense of meaninglessness and is reborn to the value of his own life; ironically, the blind man regains proper “sight.” The paper discusses four important aspects that contribute to the Earl’s transformation: the irony in Gloucester’s blinding, Edgar as Gloucester’s guide and teacher, the manipulation of Gloucester’s imagination, and the symbolism of the cliffs themselves. Historical significance and symbolism underscore the importance of the geographical reference, which has not been adequately discussed. Overall, the paper concludes that the elements within the scene—the irony of blindness, the loyal son, imagination, and the symbolism of the white cliffs—bring about Gloucester’s transformation from despair to hope.

#### “But I’m Already Done!”: Early Closure and the Student Writer

*Presented at the Southeastern Writing Center Association Conference, February, 2013*

**Student: Ashley Moore** (2014)

Faculty Mentor: Jane B. Smith, Ph.D.

CAS – Department of English

(WRIT 500 – Smith)

Arguably the most frustrating type of tutorial is one in which the student brings in an unfinished draft but believes that he or she has “finished” the assignment. The tutor wishes to help, but nearly all suggestions fall on deaf ears, because the student does not intend to “rewrite” any portion of the assignment or “start over.” The tutorial is frustrating to both the tutor and to the student because each is looking at the writing process in a very different way. While tutors understand that there is never a true “finish line” when writing, students often view the writing process as linear with a clear and determined “end.” In this paper, I explore possible answers as to why students experience early closure within the writing process as well as potential theories and strategies for Writing Center tutors to utilize when working with a student who is experiencing early closure. I argue that the understanding of the writing process as a linear structure is the leading cause of early closure in student writing; therefore, changing a student’s thinking about the writing process by focusing on a nonlinear structure is the key to keeping early closure at bay. I use academic research to develop and support my argument regarding the importance of advocating a nonlinear writing structure as well to explore useful strategies for tutors to use when working to prevent or overcome early closure in student writing. A survey of Winthrop students also reveals a tendency to experience early closure as well as the reasoning behind it.

#### “This Is Who You Are”: Examining Ideology within Margaret Atwood’s

##### “The Handmaid’s Tale”

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/Graduate Research Conference, March, 2013*

**Student: Ashley Moore** (2014)

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Bickford)

Many scholars have closely examined the concept of power within Margaret Atwood’s *The Handmaid’s Tale* since its original publication in 1985. Nearly all aspects of the power struggle between men and women have been analyzed from the physical violation of women to Peixoto’s sexist remarks in the novel’s Historical Notes; however, few have attempted to answer the following questions: how do the novel’s men manage to control the women? Why do the women tolerate their oppression? In this paper, I explore the concept of ideology as a means of power using the theories of Marxist writer Louis Althusser. Through both scholarly research and a close reading of the novel, I argue that one can understand Gilead’s successful control of women by examining the regime’s ideology. The high-ranking men of Gilead must be able to move outside of their ideology in order for the ideology to be successful; they must understand that it is false in order to use it to control others. Gilead’s new social structure relies heavily on the role each woman has within the society; by authorizing specific positions for each woman or “interpellating the subject,” as Althusser describes the process, men can successfully confine each woman to her designated role. Finally, each woman must believe that she has free will in order to follow the commandments of the government; using ideology, the high-ranking Gileadean men guide each woman towards the “correct” form of thinking, all the while convincing her that she is making choices on her own.

### **Tearful Marionettes: An Analysis of Marginalized Female Sexuality in William Faulkner’s “Absalom, Absalom!”**

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/Graduate Research Conference, March, 2013 and the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Joseph Giordano** (2013)

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Bickford)

The homoeroticism between four major male characters—Henry, Bon, Quentin, Shreve—of William Faulkner’s novel, *Absalom, Absalom!*, have been subjected to the majority of queer theory scholarship. Curiously, there is a deficient investigation of the female characters’ sexual identities. Further examination of some women in the novel—Ellen and her daughter, Judith—will expose their equally unstable sexual identities and potential desires, which Southern society grossly ignores and marginalizes. Because queer theory scholarship of female sexuality in Faulkner’s novel is sparse, secondary research is not readily implemented. However, the dearth of research on this subject allows me to consult some feminist critics—Linda Dunleavy and Betina Entzminger—in order to assess female marginalization in Faulkner’s novel. The crux of my thesis relies on Charles E. Bressler’s research of queer theory methodology, which has allowed me to better apply the major tenets of the methodology. Since Ellen and Judith Sutpen’s behaviors and actions expose potentially latent homosexuality, their sexualities are ultimately unfixed and ambiguous. Ellen’s sorrowful reaction to heterosexual marriage further results in an unfulfilled and frustrated existence; in turn, this demeanor and repressed sexuality may have directly influenced Judith’s own sexuality, rendering it just as unstable and vague. If the heterosexual hegemony of Southern society marginalized and minimized the sexual identities of Ellen and Judith, then other female characters also deserve further examination as well. An in-depth analysis of these women characters may potentially reveal any similar sexual ambiguity that many queer theorists have chiefly sought in the male characters of William Faulkner’s novel.

### **Invisible Shackles: Slavery’s Ripple Effect in Zora Neale Hurston’s “Their Eyes Were Watching God”**

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/Graduate Research Conference, March, 2013*

**Student: Joseph Giordano** (2013)

Faculty Mentor: Kelly Richardson, Ph.D.

CAS – Department of English

(ENGL 515 – Richardson)

The system of slavery is a brutal and inhumane practice that subjects human beings to different forms of forced labor. Unfortunately, slavery still persists presently and existed in America until the late-nineteenth century. Africans were taken from their homeland and sold to slave-owners in America, often living in harsh conditions, treated poorly, and suffering numerous horrors until they finally gained freedom by the conclusion of the Civil War. In spite of their liberty, however, former slaves and later generations would carry the long-term effects of slavery, whether it was economical, psychological, or sociological. At issue is whether or not African-American literature often encapsulates this devastating ripple effect. Zora Neale Hurston’s novel, *Their Eyes Were Watching God*, does in fact reflect the former slave system’s negative characteristics, such as misogyny, patriarchy, and ownership control and

power, as a result of internalized and learned behaviors. As a consequence of this historical background characterized by misogynistic violence, patriarchy, and a breakdown of relationships, the bonds between latter generation black men and women are negatively affected; the system of violent patriarchy served as a model that male slaves may have based their behavior on. Traditional patriarchy conventions—and other negative characteristics that white slave-owners espoused—may have ensnared Janie into a pattern of misogynistic husbands. The oppressed people—in this case, black communities in America—have adopted similar behaviors exhibited during the slavery-era of America. Consequently, a vicious cycle is formed, which is significantly illustrated in Hurston’s novel, ultimately making it a contemporary slave narrative with anachronistic elements that should be eschewed for the sake of progression.

### **Introduction to Mathematical Modeling: Cell Growth in a Colon Crypt**

*Presented by Anna Johnson at the Eighth Annual UNCG Regional Mathematics and Statistics Conference, November, 2012*

*Supported by a Winthrop University Research Council Grant*

**Students: Kirsten Stallings** (2013), **Anna Johnson** (2013), and

**Katrina Harmon** (2014)

Faculty Mentors: Kristen Abernathy, Ph.D.; Zach Abernathy, Ph.D.; and Joe Rusinko, Ph.D.

CAS – Department of Mathematics

Incorporating STEM (Science Technology Engineering and Math) explorations into the mathematics classroom engages and challenges students. Real world scenarios help students see the application of this subject area outside of school boundaries. Through the exploration of our colon cancer model, students will experience a hands-on approach to technology in mathematics. Similarly, students will witness the strong interconnection between biology and mathematics; highlighting possible career paths for future pursuit. By watching and manipulating the cancer model, students can apply the South Carolina Standards to simulated data to generate results. We discuss the biology and computer science behind the model and illustrate mathematical applications and extensions for classroom use.

### **African Americans In The S. C. Assembly: Do They Represent Us?**

*Presented at the 2013 Annual Meeting of the South Carolina Political Science Association, March, 2013*

**Student: Osman Ali** (2013)

Faculty Mentors: Adolphus G. Belk, Jr., Ph.D. and Chris Van Aller, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Belk and Van Aller)

Do the people who make the policies and laws that dictate your life look like you? Do you have confidence in your state legislators? Are they making policies and laws that best serve you? It is important that you understand the significance of having representatives that look like the people they represent as well as make policies that benefit them. In the 2010 U.S. Census, African Americans composed 28.1 percent of the South Carolina population (Census, 2010). This matter is relevant because South Carolina only has 33 African-American legislatures out of 170, which is 19.4 percent in the State General Assembly. African Americans are underrepresented in the South Carolina legislature, which is troubling due to the fact that the most direct decisions that control our lives come through the state government. This work will research the African-American elected officials in the South Carolina General

Assembly. It will examine the importance of diversity in the legislature, the post-reconstruction legislative body, and post-1965 Voting Rights Act. Furthermore, this paper will analyze the composition of the South Carolina legislature, the policies created by African-American elected officials, and how the African-American elected officials represent their constituents. This work will answer the question, “Is the South Carolina African-American legislative delegation symbolic or substantive?” Ultimately, this work will examine ways to make the South Carolina legislature more substantive. To determine the substantiality of African-American elected officials in South Carolina General Assembly, I will be performing original research on the state level.

### **Predictors of Effort Expenditure Following a Mental Fatigue Challenge**

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Chauntice Buck** (2013)

Faculty Mentor: Donna W. Nelson, Ph.D.

CAS – Department of Psychology

Our study examined factors that influence effort expenditure in college students. Mental fatigue has been shown to decrease careful information processing (Webster, Ridhter & Kruglanski, 1996) and thus is likely to interfere with effort devoted to academic work. Individual differences impact the motivation to exert effort and will also likely impact one’s response to a mentally fatiguing situation. Prior research suggests that the experience of childhood adversity can have important effects. For example, some research suggests lower SES in childhood is linked to lower school performance (e.g., Hecht & Greenfield, 2001). Although chronic life strains such as low SES may leave individuals vulnerable to the negative effects of stress, some theoretical and empirical evidence suggests that the experience of facing difficulties can provide benefits. For example, Seery (2011) argues that life adversity can create a greater predisposition for resilience when dealing with stressful situations. Our purpose was to explore the effect of childhood life strain on effort expenditure in college students who encounter a challenging situation. Fifty nine female and twenty-one male undergraduate students participated in the study. We randomly assigned participants to complete an anagram problem solving task under high or low mental fatigue conditions. Our main dependent variable was the amount of effort exerted. We also assessed a variety of demographic and individual difference variables including the experience of childhood financial strain. Our analyses yielded a significant interaction between fatigue condition and childhood SES on effort expenditure  $F(2,78)=5.285, p<.01$ . In the low mental fatigue condition, effort was highest for participants with low childhood SES. However, in the high mental fatigue condition, effort was lowest for those with low childhood SES. No significant effect of gender or race was observed. Overall, participants who experienced low childhood SES generally exerted greater effort than their higher SES counterparts. However, when faced with the additional stressor of the fatigue manipulation, the low SES participants seemed to falter, exerting less effort. Our findings suggest a need for specialized programs in school and work settings, geared toward improving the coping skills of persons with a history of low SES and high levels of fatigue.

### **The Effect of Mental Fatigue and Mood on Interpersonal Problem Solving**

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Ainsley T. Hebert** (2013)

Faculty Mentor: Donna W. Nelson, Ph.D.

CAS – Department of Psychology

Our project examined factors that inhibit or augment effective problem solving in interpersonal contexts. Prior research indicates that depression is associated with deficits in social problem solving (e.g., Marx, Williams & Claridge, 1992). Negative emotions have been linked to narrow attention and inflexible thinking and problem solving (Davis & Nolen-Hoeksema, 2000). In contrast, a broadening effect has been linked to positive emotions (e.g., Fredrickson, 1998; 2001). We wondered whether mental fatigue would be linked to poor social problem solving, in a way similar to depression. Our study explored this possibility and also examined whether positive emotion may help to buffer individuals from the negative effects of mental fatigue. Experimental participants first completed a task designed to induce high or low mental fatigue. They then underwent a mood induction procedure. Finally, they completed the modified version of the Means-End Problem Solving Test (Marx et. al, 1992). This test requires respondents to generate solutions to several interpersonal problems. Our dependent variables were the effectiveness of solutions and the number of relevant steps generated to solve the social problems. Analyses for the effectiveness measure yielded a significant interaction between fatigue condition and mood condition,  $F(1, 124) = 3.811, p<.05$ . When experiencing a neutral mood, participants in the high fatigue condition generated less effective solutions compared to those in the low fatigue condition. However, when induced to experience positive mood, no differences in effectiveness ratings were found as a function of fatigue condition. We also found a significant interaction between fatigue condition and mood condition for the relevant means measure,  $F(1,124)= 4.341, p<.03$ . When experiencing a neutral mood, participants in the high fatigue condition generated a lower average number of relevant steps to solve the interpersonal problems compared to those in the low fatigue condition. However, when induced to experience positive mood, no differences in relevant means were found as a function of fatigue condition. In sum, although mental fatigue inhibited social problem solving, positive affect mitigated the effect. Our findings support Fredrickson’s (1998, 2001) broaden and build theory of positive emotions and demonstrates that state-like emotions have implications for social functioning.

### **An Exploration of Variables that Predict Attitudes about Interracial Romance**

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Brittany Lawrence** (2014)

Faculty Mentor: Donna W. Nelson, Ph.D.

CAS – Department of Psychology

As the world becomes more globalized and diverse, the topic of interracial/interethnic relationships grows more relevant. Between 2000 and 2010, the number of interracial/inter-ethnic married couples living in the U.S. increased to 10 percent (U.S. Census Bureau, 2012). Knox, Zusman, Buffington, & Hemphill (2000) propose that the increase in numbers could be due to a more ethnically diverse population and greater acceptance of diversity. We tested how variables such as gender, age, education, and individual traits such as conservative orientation (Duckitt, Bizumic, Krauss & Heled, 2010), avoidance motivation (Gray, 1972 & 1981), and openness (Costa & McCrae, 1992) may play an important role in attitudes about interracial relationships. 123 female and 43 male adult college students completed our survey. Participants represented Caucasian, African American, Asian, Hispanic/Latino and “other” ethnicities. Results revealed that the majority (67 percent) of participants were open

to involvement in interracial romantic relationships. Those high (versus low) in Authoritarianism were less open to becoming involved in an interracial romance,  $t(159) = 2.14$ , ( $p < .05$ ). Those high (versus low) in avoidance orientation were also less open to interracial romance,  $t(160) = 1.80$ , ( $p < .06$ ) (approaching significance). In contrast, those high (versus low) in openness were more favorable about becoming romantically involved in an interracial relationship,  $t(165) = -2.05$ , ( $p < .05$ ). In addition, those participants who identified themselves as republican, compared to independent, democrat or no affiliation, were significantly less open to interracial romance,  $F(3) = 14.67$ , ( $p < .05$ ). Race had a significant effect on openness to involvement in an interracial relationship,  $F(4, 166) = 8.386$ , ( $p < .05$ ). African American ( $M = 6.19$ ) and Asian ( $M = 7.00$ ) were more favorable toward interracial relationships than Caucasian ( $M = 4.60$ ) and Hispanic ( $M = 5.33$ ) participants. Gender had no significant effect on openness to interracial romantic involvement. Year in college had a significant effect on willingness to enter an interracial romance,  $F(5, 165) = 3.555$ , ( $p < .05$ ). Results showed that seniors showed more support for interracial romance than freshmen. In conclusion, our study provides evidence that people's personalities and life experiences greatly influence their attitudes and behaviors tied to interracial relationships.

#### Surficial Geologic Map of Ninety-Six National Historic Site, Ninety Six 7.5 Minute Quadrangle, South Carolina

*Presented (as a poster) at the Annual Meeting of the Geological Society of America in Charlotte, N.C., November, 2012*

*Supported by a grant awarded to Henry M. White for May-September, 2012 by the National Park Service's Geoscientists-In-The-Parks Program and the Geological Society of America GEOCORP America Program*

**Students: Henry M. White** (2012) **and Lauren Macino**

Faculty Mentors: Irene Boland, Ph.D. and Scott Werts, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Ninety Six National Historic Site, located in Greenwood County, South Carolina, site of a major Revolutionary War battle and siege, covers roughly 1022 acres of fields and mixed deciduous and pine forest land. A surficial geologic map of the site was created in conjunction with the National Park Service and the Geocorps program. Due to the paucity of rock outcrops located within the park boundary, we utilized soil, outcrops, and local float to draw correlations between soils and possible parent rock. By characterizing soils present in proximity to available rock material, a reasonable assumption could be made to determine the type of parent rock material underlying areas of the park. Fine to medium-grained unfoliated biotite metagranite is the predominant rock type present within the park. Other rock-types found include porphyritic metagranite, felsic gneiss, biotite gneiss, and diabase. Soil particle size and color were also utilized in order to draw possible correlations between the parent rock and surface materials. Most of the park soils are a sandy clay loam at 20 cm depth with color variation between 2.5YR through 10YR in the Munsell Soil-Color Charts. Soil characteristics suggest that most of the park is underlain by biotite metagranite cut by several small diabase dikes. In the southeastern corner, fine grained metagranite porphyry crops out along the north facing slope to Ninety Six creek and biotite metagranite and biotite gneiss crop out in the creek. The map includes polygons of soil types that are believed to have been derived from the parent rock material.

#### Metric Learning for Phylogenetic Invariants

*Presented at the SIAM Conference on Applied Algebraic Geometry, August, 2013*

*Supported by an SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)*

**Students: Hannah Swan** (2014), **Ethan Hanner** (2014), **and Emili Price** (2015)

Faculty Mentors: Joseph Rusinko, Ph.D. and Brian Hipp

CAS – Department of Mathematics

We improve upon existing algorithms for reconstructing evolutionary trees using phylogenetic invariants by writing a parallel version. We also build on Eriksson and Yao's work, which used machine learning to optimize the power of phylogenetic invariants. While previous work focused on selecting a good set of invariants for the construction of quartet trees, we extend this work to trees with more taxa. In addition to the invariants, we include inequalities arising from the study of the real points on the phylogenetic variety into the metric learning algorithm.

#### Cloning and Expression of Human Sphingosine Kinase 1 for Structure Determination by X-Ray Crystallography

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

*Supported by an NIH-INBRE Grant from the National Center for Research Resources and the National Institute for General Medical Sciences*

**Student: Tyler Couch** (2013)

Faculty Mentor: Jason C. Hurlbert, Ph.D.

CAS – Department of Chemistry, Geology, and Physics

Ceramide, sphingosine, and sphingosine-1-phosphate are lipid signaling molecules that have been shown to control cellular fate. Sphingosine kinase 1 (SK1), an enzyme of the sphingolipid metabolic pathway, has been found to be overexpressed in various types of cancers including breast, colorectal, ovarian, and lung. Increased expression of SK1 has been shown to promote tumor angiogenesis and proliferation while protecting against radiation and chemotherapy. For these reasons, SK1 has become a target in the treatment of cancer for which new therapeutics are being developed. However, there currently is no three-dimensional structure of SK1 upon which inhibitors can be designed. Our laboratory aims to express soluble SK1 in *Escherichia coli* so that it may be purified and studied by x-ray crystallography for subsequent structure determination. We have designed and tested a codon-optimized gene for the catalytic core domain of the human SK1 using a base expression vector backbone. Attempts to express this gene in four different strains of *E. coli* have failed to yield requisite amounts of protein as determined by MALDI-TOF MS. The SK1 gene has been subcloned into two other prokaryotic expression constructs. The new expression plasmids will be tested and expression conditions optimized in order to obtain soluble protein for crystallization trials. Determination of the three-dimensional structure of SK1 alone and in complex with sphingosine, ADP, or ATP analogues and known inhibitors will allow for a better understanding of the reaction mechanism of this novel family of enzymes.

#### Ibuprofen Induces Growth Cone Collapse in Embryonic Retinal Neurons

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

*Supported by Winthrop University and an NIH-INBRE Grant from the National Center for Research Resources and the National Institute for General Medical Sciences*

**Student: James A. Vinton** (2014)

Faculty Mentor: Eric Birgbauer, Ph.D.

CAS – Department of Biology

During embryological development of vertebrates, retinal ganglion cell (RGC) axons grow out of the optic fissure and innervate the tectum in birds or the superior colliculus in mammals. A variety of chemical cues are thought to govern this nerve growth in what is known as axon guidance. These extracellular signaling molecules potentially hold the key to advancements in nerve regeneration therapy. Fu et al and Wang et al found that treatment with ibuprofen promoted nerve regeneration after spinal cord injury in mice (2007, 2009). Ibuprofen is a non-steroidal anti-inflammatory drug used to treat pain and inflammation through its inhibition of the COX 2 pathway. However, Fu et al suggested that ibuprofen promoted nerve regeneration through a novel pathway by reducing the active intracellular RhoA (2007). RhoA is a GTPase whose activation has been shown to induce growth cone collapse, an *in vitro* response to inhibitory axon guidance molecules. Lysophosphatidic acid (LPA) is a bioactive lipid that is known to induce growth cone collapse *in vitro* through a RhoA mediated pathway. Therefore, we wanted to investigate if ibuprofen would prevent LPA induced growth cone collapse in our model. A growth cone collapse assay was performed using RGC's from E6 chick embryos. Treatment with 500 $\mu$ M or 50 $\mu$ M ibuprofen did not inhibit LPA induced growth cone collapse. In fact, the 500 $\mu$ M ibuprofen treatment induced growth cone collapse independently of LPA and increased growth cone collapse in the presence of LPA. Time-lapse microscopy was performed to determine that LPA caused a typical growth cone collapse in the presence of ibuprofen. Furthermore, preliminary biochemical analysis of active RhoA revealed that ibuprofen treatment does reduce active RhoA in chick retinal cultures despite not blocking growth cone collapse. In conclusion, although ibuprofen does reduce intracellular active RhoA, it does not inhibit LPA induced growth cone collapse in chick retinal neurons.

#### Characterization of Copper (I) Binding Thermodynamics to Various Small Molecules

*Presented at the Suddath Symposium, February, 2013*

*Supported by an NIH-INBRE Grant from the National Center for Research Resources and the National Institute for General Medical Sciences*

**Student: Destinee Johnson** (2014)

Faculty Mentor: Nicholas E. Grosseohme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Copper (I) is essential for several biochemical processes within enzyme active sites such as electron transfer, dioxygen binding, catalysis, and structural activity. Although the cuprous ion is the physiologically relevant oxidation state of copper, *in vitro* experiments have, in large, been focused on Cu<sup>2+</sup> because it is stable under typical laboratory conditions. Furthermore, under anaerobic conditions, Cu<sup>+</sup> participates in a disproportionation process which favors Cu<sup>2+</sup> by a factor of approximately 1000 relative to Cu<sup>+</sup>. As such, careful experiment design is necessary to alleviate these complications. This research aims to provide the necessary experimental foundation to directly measure the thermodynamic forces associated with cuprous ion binding energy using isothermal titration calorimetry. To avoid the potential of

Cu<sup>+</sup> oxidation, all colorimetric and calorimetric experiments were conducted in a Coy Lab glove box. Additionally, acetonitrile (MeCN) was used as a stabilizing ligand to abrogate the disproportionation equilibrium of Cu<sup>+</sup>. The spectrophotometric data verified that the expected 2:1 biconchonic acid (BCA)-Cu<sup>+</sup> complex was formed under these experimental conditions. The colorimetric data provided a methodical background for subsequent calorimetric experiments that determined thermodynamic parameters of Cu<sup>+</sup> binding. In Tris buffer (pH 7.5), the average binding constant was  $K = 2.2 \pm 0.2 \times 10^6 \text{ M}^{-1}$ . The average enthalpy value was  $\Delta H = -28 \pm 0.3 \text{ kJ/mol}$ , and the average reaction stoichiometry ( $n$ ) was  $2.1 \pm 0.05$ . In bis-tris buffer (pH 7), the average enthalpy was  $-34 \pm 0.4 \text{ kJ/mol}$ , and in Hepes buffer (pH 7), the average enthalpy was  $-37 \pm 0.5 \text{ kJ/mol}$ . The difference in enthalpy values may be due to the interactions of the Cu<sup>+</sup>-BCA complex with different biological buffers. My future research will continue to explore this hypothesis.

#### “God Bless America” – A Creative Work (Short Prose)

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/Graduate Research Conference Creative Writing Showcase, March, 2013*

**Student: Joseph A. Giordano** (2013)

Faculty Mentor: Scott Ely

CAS – Department of English

This short story consists of an elderly man who lives atop a cliff in a coastal town, a spot that is notorious for its suicides. The old man is renowned for previously preventing people from jumping and coaxing them out of it. The story, however, takes place when a young woman jumps to her death as the elderly resident watches.

#### A Colorectal Carcinogenesis Model Incorporating Insulin and Insulin-Like Growth Factor 1

*Presented at the Mathematical Biosciences Institute Undergraduate Research Capstone Conference, August, 2012 and at the Eighth Annual UNCG Regional Mathematics and Statistics Conference, November, 2012*

**Students: Matthew Neal** (2013), **Wayne Anderson** (2014), **Dane Flinchum** (2013), **and Stephen McFall** (2014)

Faculty Mentors: Joseph Rusinko, Ph.D.; Kristen Abernathy, Ph.D.; and Zachary Abernathy, Ph.D.

CAS – Department of Mathematics

Edward Giovannucci proposes that variation in insulin and insulin-like growth factor 1 (IGF-1) levels influence colonic carcinogenesis. To study these proposed effects, we develop a system of linear ordinary differential equations to model the human colon on an intracellular level, incorporating insulin and IGF-1 and their effects on mutated cell populations. In particular, we focus on the insulin-dependent and independent intracellular signaling pathways and how they influence programmed cell death and growth. We consider the dynamics of all colorectal crypts using a compartmental approach, accounting for stem cells, transit cells and differentiated cells. With this model in place, we determine how changes in insulin and IGF-1 levels affect mutated cell growth. Using Wolfram System Modeler, we show that high levels of insulin increase the number of cells that resist apoptosis and can lead to the growth of tumors. Our model also tests parameters simulating Familial Adenomatous Polyposis (FAP), a hereditary condition in which stem cells have a mutation at birth. Simulating these conditions, we found that IGF-1 levels noticeably affect the number of mutated cells found after eighty years.

### A Reaction-Diffusion Model of Polyp Growth

*Presented at the MAA Southeastern Conference, March, 2013*

**Students: Whitney Taylor** (2013), **Matthew Neal** (2013), **Johnakin Martin** (2014), **and Kirsten Stallings** (2013)

Faculty Mentor: Kristen Abernathy, Ph.D.

CAS – Department of Mathematics

To model insulin's effect on polyp growth, we develop a predator-prey system of reaction-diffusion equations in which neoplastic tissue competes with cancerous tissue over available insulin in the colon. We use reaction-diffusion equations to model the growth of polyps, a precursor to carcinomas and tumors. Our research includes the development of the model and nondimensionilization of equations. In the future, we hope to obtain numerical results that can be analyzed to determine under which conditions a polyp becomes cancerous.

### Race, Gender, Age, and Divorce Associated with Specific Parenting Beliefs

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

*Received Second Place for the CEPO Research Award*

**Student: Brittney Black** (2013) (McNair Scholar)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

Parenting beliefs can be influenced by many different factors ranging from religion (Lees & Horwath, 2009) to parental stress (Respler-Herman, Mowder, Yasik, & Shamah, 2011). The purpose of the current study was to examine additional factors that might predict parenting beliefs and parenting behaviors. Participants were 122 adults (77 women and 44 men) with a mean age of 23.16 (sd = 9.23). Forty-two percent of our sample was Caucasian and 35 percent was African American. Based on consistent themes in parenting research, we created five statements to assess parenting behaviors and 15 statements to assess parenting beliefs. Participants responded on a Likert scale from strongly disagree to strongly agree. In general, participants who were older, from a divorced home, or raised in a low SES situation were more dissatisfied with the way they were raised. SES did not predict parenting beliefs or behaviors. Divorce and age also were not highly predictive of parenting beliefs and behaviors. Race and gender emerged as much more influential variables. Compared to men, women agreed more to statements regarding teaching, affirming, hugging, communicating, and protecting their children. Compared to Caucasians, African Americans were more likely to agree with statements reflecting the parent in an authority role. Our findings indicate that race, gender, divorce, and age exerted unique influences on young adults' parenting beliefs and that many factors may work together.

### Relations among Parentification, Parenting Beliefs, and Parenting Behaviors

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Brittney Black** (2013) (McNair Scholar)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

Instrumental parentification occurs when children take on adult responsibilities, and emotional parentification occurs when children take on the responsibility for providing an adult-level of emotional support; these often co-occur with perceived unfairness (Jurkovic, Thirkfield, & Morrell, 2001). Although much research documents the negative outcomes of

parentification, research is lacking on how childhood parentification relates to parenting in adulthood. Participants were 77 women and 45 men with a mean age of 23.16 (sd = 9.23). We used the Parentification Questionnaire to measure parentification (Hooper & Wallace, 2010). Parenting behaviors and beliefs were assessed by having participants respond with their level of agreement to 20 statements. Results revealed that childhood parentification resulted in young adults' decreased self-esteem and increased displeasure with their parents. In contrast, parentification did not clearly predict parenting beliefs or behaviors. The data suggests an implicit notion of parenting shared by young adults that is more influential than a childhood experience with parentification. This finding may be reassuring to those who experience parentification and adds to our growing understanding of this concept.

### Young Adults Perceive Traditionalism in Their Fathers Differently than in Their Mothers

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Molly Crocker** (2014), **Catherine Rogers** (2013), **Katelyn Boan** (2013), **and Kendra Glover** (2012)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

A traditional family is typically defined as one where a mother and a father marry before they have children and then raise the children together (van der Valk et al, 2008). Growing up in a traditional household effects how children view themselves and their own gender roles (Slavkin & Straight, 2000). Our study modified this perspective by examining how the level of traditionalism in participants' childhood homes related to their perceptions of their parents. Participants were 100 young adults, with a mean age of 20.69 (sd = 3.15). Participants responded to a survey that assessed their parents' engagement in traditional, gender-specific behaviors. For example, a father who worked full-time was considered to be traditional. We also assessed participants' relationship with their parents using the Parent-Child Communication Scale (1998) and demographics. Overall, the data from the current study suggests that the level of traditionalism in the childhood home influences the adult child-parent relationships. Results revealed high correspondence between the traditionalism level of the mother and of the father. We also found that traditional fathers had better relationships with their children; however, the same pattern did not hold true for mother. Children reported having a positive relationship with their mothers regardless of how traditional they perceived her to be. Non-traditional behavior in mothers was associated with the perception of the mother being more intelligent than the father. These findings add to our understanding of complex family dynamics.

### Athletes versus Non-Athletes: Identity, School Belongingness, Self-Acceptance, and Life Satisfaction

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Taylor Cox** (2013)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 472 – Sleigh)

Participation in sports, in both high school and college, has been extensively studied and linked to many psychological outcomes. For example, past research has examined variables such as body satisfaction, dieting, social motivation, and academic motivation in athletes

versus non-athletes (Pedescleaux, 2011; Rosendahl, Bormann, Aschenbrenner, & Aschenbrenner, 2009; Swami, Steadman, & Tovee, 2009). We expanded this examination of athletes versus non-athletes by comparing the two groups on self-identity, school belongingness, self-acceptance, and life satisfaction. Eighty-five undergraduates, with a mean age of 22.04 (sd = 4.21), responded to an online survey which assessed their connection with their university (Goodenow, 1993), their level of unconditional self-acceptance (Chamberlain & Haaga, 2001), their satisfaction with life (Diener et al, 1985), and aspects of their high school and college identities. Roughly half of the participants were currently involved in athletics (athletes) and the other half were not (non-athletes). In general, our data suggests that having an identity as an athlete may be a short-lived self-perception, ending for most people by college. Compared to non-athletes, college athletes experienced lower rates of self-acceptance and satisfaction with college, perhaps because playing a sport elicits ongoing, and sometimes critical, feedback about performance. Interestingly, athletes failed to see themselves as leaders, although sports participation typically requires an element of leadership. In contrast, having an identity as a leader and feeling understood by others was linked with higher levels of belongingness, self-acceptance, and life satisfaction. These results show how participation in a school sport might have an effect on a person's transition to college and influence aspects of the individual's overall identity.

### Young Adults' Preference for Pictures of Ovulating versus Non-Ovulating Women

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Katelyn Boan** (2013) **and Catherine Rogers** (2013)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 472 – Sleigh)

A prominent theory in evolutionary psychology is that women are more attractive to men when they are ovulating, because ovulation signals reproductive capability. Previously published research has demonstrated that photographs of women were rated as more attractive by men when the women were ovulating than when the women were photographed during different times of the month (Bailey, Durante, & Geary, 2011; Haselton & Gildersleeve, 2011). We replicated these studies and investigated whether other factors influenced preferences, such as a desire to have children, experience living with women, and knowledge regarding women's menstrual cycles. Participants were originally 186 young adults. We excluded participants who described themselves as non-heterosexual, resulting in a sample of 148 participants (39 percent men and 61 percent women) with a mean age of 23.15 (sd = 6.8). Participants viewed a series of fourteen paired photographs of women. Each pair of photographs included the same woman photographed in identical circumstances (e.g., clothing, background, facial expression) with the exception of the time of month. One photograph was of the woman one day after her period ended, and the other photograph was seven days later, corresponding with the expected time of ovulation. The photographs were counterbalanced within each pair. Participants viewed both photographs at the same time online and selected the photograph that they considered to be most attractive. Participants then responded to an online survey that assessed variables such as their desire to have a family and their knowledge of women's reproductive cycle. We calculated an ovulation preference score for each participant by summing the number of pictures of ovulating women that were selected. In sum, our data did not support the hypothesis that men prefer pictures of women who are ovulating over pictures of women at other times during their cycle. The lack of significant findings could indicate a flaw with the hypothesis or that not enough information was conveyed through the photographs that were used. Men's preference for ovulating women is likely to relate to many factors, such as pheromones, that are not available in photographs. However, we did find differences in perceptions of women's menstrual cycles that related to gender, religion, personal experience with menstruation, and dating history.

### Perceptions of “I Love You” Depend on Gender of the Speaker and Receiver

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Molly Holoubek** (2014), **Ainsley Hebert** (2014), **Martha Hills** (2013), **and Nicole Wechselberger** (2014)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

Previous research demonstrates that people perceive romantic situations in unique ways. For example, individuals who have a more loving mindset interpret ambiguous situations more optimistically and tend to be future-oriented (Epstude & Forster, 2011; Forester, 2010). Many of the past studies focused on people's perceptions about their own relationships. We examined how observers would interpret an ambiguous situation in which “I love you” was spoken. Specifically, we examined young adults' perceptions of “I love you” to assess how the level of trust and optimism of the participant as well as the gender of the speaker/receiver influenced perceptions. We hypothesized that women would have more optimistic and romantic interpretations of the presented situations. Participants (n = 127) with a mean age of 19.67 (sd = 2.88) were randomly assigned to read one of four vignettes in which one person told another “I love you.” The vignettes differed by gender of speaker and receiver in the following four combinations: man to woman, woman to man, man to man, woman to woman. Participants then responded to questions to assess their perceptions of the vignette, level of trust (Naef & Schupp, 2009), and optimism (University of Mianmi, 2012). The results demonstrated that observers do make attributions about relationships that include the phrase, “I love you.” Specifically, both male and female participants perceived two women expressing affection as representing a friendship, and a man telling a women, “I love you” as romantic. This finding may reflect stereotypical views or may indeed reflect societal patterns. Despite these results that seem to favor a heterosexual interpretation, our participants had generally positive views about all four scenarios, believing the speaker to be sincere. Trusting participants were especially likely to believe that the expression, “I love you,” was sincere, and they, along with optimistic participants, believed the relationship would last longer. These findings contribute to our growing understanding of relationship attributions.

### Relations among Procrastination, Risk-Taking, and Shame versus Guilt

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Andrew Pfeiffer** (2014), **Samantha Fulmer** (2013), **and Jessica Richardson** (2012)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

Procrastination is defined as the tendency to postpone what is necessary to reach specific goals (Ozer & Uzun, 2011) and has been extensively studied in regard to its negative impact on academic success (e.g., Ozer, Demir & Ferrari, 2009; Watson, 2001). Risk-taking is another well researched concept defined as participating in activities with a high likelihood for danger or failure (e.g., Weller & Thulin, 2012; Zuanon et al, 2012). We examined whether procrastination and risk-taking tend to occur together and how they relate to personality tendencies toward either shame or guilt. In general, people with feelings of shame respond to bad behaviors by feeling poorly about themselves, whereas people with feelings of guilt focus on the behavior being bad, not themselves (Cohen, Wolf, Panter, & Insko, 2011). Participants (n = 85), with a mean age of 23.0 (sd = 8.51) responded to the Guilt and Shame

Proneness Scale (Cohen et al, 2011), the Lay Procrastination Scale (Lay, 1986), and the Domain Specific Risk Taking Scale (Blais & Weber, 2006). We hypothesized that procrastination would be positively correlated with risk-taking. This hypothesis was supported, raising the possibility that procrastination may be considered a mild form of academic risk-taking. We also hypothesized that procrastination and risk-taking, which have the potential to lead to negative outcomes, would be linked to a tendency to feel shame, or self-blame. Procrastination was not linked to shame, and risk-taking was actually associated with lower levels of self-blame (shame) and self-reflection (guilt). One explanation is that participants who have a tendency to feel shame or guilt avoid behaviors that might elicit these feelings, such as procrastination and risk-taking. Or, perhaps people who engage in these behaviors do not perceive them as leading to negative outcomes, thus preventing feelings of shame and guilt. The findings of this study may have value to university students and those that serve them, as well as contribute to our understanding of these widely studied variables.

#### “Letting him Suck his Thumb”: An Examination of Parenting Regrets

*Presented at the McNair Scholars Showcase, 2012*

**Student: Vitta Clawson** (2013) (McNair Scholar)

Faculty Mentor: Merry J. Sleigh, Ph.D.

CAS – Department of Psychology

We examined a relatively unexplored area: parenting regrets and their predictors. Parents (81 women and 22 men), with a mean age of 38.76 (sd = 9.42), responded to an online survey. Participants shared information about parenting regrets associated with each individual child, as well as demographic information. Parents' qualitative responses about their regrets were categorized with an inter-rater reliability of .92. Every father reported a regret, whereas 11 percent of mothers reported no regret. Fathers' responses were limited to three categories, with lack of time and spoiling the child being (by far) the most common. Mothers showed more variability. Mothers regretted being too strict and having interpersonal conflict with their child. Mothers regretted financial limitations, whereas fathers never did. Interpersonal issues, indicating some level of conflict, was the number one regret related to daughters, whereas not spending enough time was the most common regret for sons. Parents were slightly more likely to regret being strict with their sons than with their daughters. Otherwise, parents reported similar regrets across genders. Caucasians had a wider range of regrets than did African Americans. Caucasians expressed regret over the age when they become a parent and their marital status whereas African Americans did not. Only six percent of African Americans regretted not spending enough time with the child, whereas this was the most common response for Caucasians. African Americans worried almost twice as often about spoiling their children. Overall, the most common regret for parents was not having time, especially for parents with multiple children. Spoiling children increased with multiple children, perhaps as a compensatory mechanism. Parents reported having more interpersonal issues and more regret with firstborns compared to later children. Compared to all other ages, parents in their 20s were more likely to have regrets related to time and money, most likely reflecting the uncertainty and demands of this stage of life. The more parents thought their behavior affected their child, the more deeply they felt the regret. Some issues caused feelings of very deep regret, such as being divorced, not supporting the child's interests, and being too strict.

#### De-Glorifying Ghent: A Historiography of the Treaty of Ghent

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Amber Schilling** (2014)

Faculty Mentor: Virginia Williams, Ph.D.

CAS – Department of History

(HIST 300 – Williams)

The Treaty of Ghent concluded the War of 1812 between the United States and Great Britain. The historical view of the war and the treaty are often skewed in favor of a highly grandiose interpretation. The conflict itself is often overblown in favor of the United States and a keenness for storytelling, and analysis of the treaty often misses many key issues and places emphasis on all of the wrong things. Over the past century, historians have drifted away from this conservative point of view. This paper evaluates the historiographical evolution of several specific issues regarding the treaty, including the following: the offer of mediation between the two belligerents by Russian Tsar Alexander I, the perception of the American and British peace commissioners, popular views of the treaty in both nations, and the resolutions and results of the treaty. This paper draws on articles and books from the past century, illustrating the changes in schools of historical thought over time. Examining sources from different eras, this paper describes how the Treaty of Ghent gradually loses its ascribed glory, demonstrating the transition from traditional to social history.

#### Development of an Instructional Laboratory Experience Utilizing 1H-NMR to Determine Fat Characteristics from Food Samples

*Presented at the 245<sup>th</sup> ACS National Meeting and Exposition, April, 2013*

**Student: Amy Moore** (2013)

Faculty Mentor: Aaron M. Hartel, Ph.D.

CAS – Department of Chemistry, Physics and Geology

(CHEM 552 – Sumter)

Student engagement should be a priority in developing new laboratory experiences. We have developed a laboratory exercise in which students analyze packaged “convenience” foods (crackers, cookies, chips, candies) to determine several characteristics about the food's fat content. In this lab, students extract the fat from a sample of the food and gravimetrically determine the amount of fat per serving. The students acquire a 1H-NMR of the recovered fat and use the data to determine the levels of saturated, unsaturated, monounsaturated and polyunsaturated fats in the food. Students can then compare their results to the information provided on the food package label. This experiment engages students in the learning process by connecting with their prior knowledge and familiarity of the foods used. By performing the exercise, students learn several important concepts and techniques of organic chemistry such as extraction, filtration, structure-solubility relationships, NMR spectroscopy, and structural characteristics of fats.

#### Religion and Women's Movements: The Impact of Religious Fundamentalism on the Global Women's Movement

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Sarah Cohen** (2014)

Faculty Mentor: Jennifer Leigh Disney, Ph.D.

CAS – Department of Political Science

(PLSC 337 – Disney)

Despite the large amount of research that exists showing the consequences of religious ideology in a country, little research exists on the impact of religion, particularly religious fundamentalism, on the women's movement within a particular country. It is a widely held belief that religious ideologies often hinder women's movements. This research paper looks at four different countries (Iran, Pakistan, Brazil, and Poland) to understand the often complex relationship between religion and women's movements. For this purpose, the paper employs essays written on each one of these countries' women's movements as well as essays concerning specific religions and religious practices. This research yields the analysis that religious fundamentalism is on the rise and that the presence of religious fundamentalism leads to a hindering of the global women's movement. This research shows that religious fundamentalism is inherently patriarchal, and therefore women in countries with a large presence of religious fundamentalism often have to work within the liberal feminist model. However, in the midst of religious fundamentalism women often find various benefits. This research shows how religious ideology can act in contradictory ways and helps us to understand the impact that it has on the fight for women's equality.

#### The Protein C and Plasminogen Systems in Angiogenesis

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

*Supported by a Winthrop University Research Council Grant*

**Students: Allison Stahl** (2013) **and Grace Jones** (2015)

Faculty Mentor: Laura Glasscock, Ph.D.

CAS – Department of Biology

Prostate cancer (CaP) is the second leading cause of death in men in the United States (Siegel 2012). We investigated the expression of two transmembrane receptors, thrombomodulin (TM) and endothelial cell protein C receptor (EPCR), thought to be involved in CaP metastasis. TM and EPCR are normally expressed by endothelial cells in the blood vessel where they function as anti-coagulants. The localization and function of these receptors on endothelial cells is well-documented. Our previous Western blot studies have shown that TM and EPCR are also expressed by CaP cells where they regulate proliferation and invasion by these cells. This study investigated the effect of plasminogen activator inhibitor-1 and urokinase plasminogen activator on endothelial cell microtubule formation in vitro. Previous preliminary data generated by our lab has shown that individual proteins of the protein C system, including TM, protein C, and activated protein C (APC), affect the ability of human umbilical vein endothelial cells (HUVECs) to form microtubules in MatrigelTM. We have re-established this microtubule growth system and are verifying these results. We are currently determining if PAI-1, which inhibits both APC and thrombin, and uPA, which activates the cleavage of plasminogen into plasmin, affects how the protein C system regulates microtubule formation. These studies will provide further insight into how the proteins of the protein C system, both individually and together, regulate prostate cancer progression.

#### Gender Revolutionary Politics: The Convergence of Women's Activism and Feminist Strategy in Contemporary Chiapas, Mexico

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Sarah Sladek** (2014)

Faculty Mentor: Jennifer Leigh Disney, Ph.D.

CAS – Department of Political Science

This paper explores the impact of the involvement of women in the Zapatista movement of Chiapas, Mexico along the following dimensions: (1) how important indigenous women are in organizing and mobilizing their communities; (2) how women have contributed to the Zapatista ideology; (3) how women have not only made spaces for themselves within this movement, but are recognized as integral components of the revolutionary struggle by their male comrades; and (4) how women have challenged patriarchal traditions, capitalism, western hegemony, globalization, and the overwhelmingly elitist, authoritarian nature of Mexican political culture. This paper argues that indigenous feminisms, like Zapatista feminism, exemplify that an intersectional approach to political organizing in women's movements does not have to become divisive and may in fact be more impactful at mobilizing diverse groups of women around diverse gender interests. In addition, this paper examines how the Mexican government has combatted indigenous uprisings by co-opting liberal feminism when necessary to portray indigenous cultures as more sexist and patriarchal than its own, thus dividing women's movements in order to make women, and especially indigenous women, less politically powerful and strip their movements of social validity and autonomy.

#### Differences in Superstitious Behaviors among Athletes, Dancers, and Musicians

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

*Winner of the Psi Chi Regional Research Award*

**Students: Hannah Owen** (2013) **and Ryan McGill** (2013)

Faculty Mentor: Merry Sleigh, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleigh)

The current study supplemented the existing research by examining differences in superstitious behavior among athletes, dancers, and musicians. Participants were 82 young adults, with a mean age of 20.25 (sd = 2.79). Twenty-nine were athletes, 31 were dancers, and 22 were musicians. Participants were recruited from Division I sports teams, advanced dance troupes, and performance bands. Participants completed a 57 question survey that measured entitlement (Campbell et. al., 2004), locus of control (Craig, Franklin, & Andrews, 1984), sensitivity to criticism (Rosenberg, 1965), sport anxiety (Victoria University, 2010), and superstitious behaviors (Bleak & Frederick, 1998). We compared the three conditions (athletes, musicians, dancers) using an ANOVA. Contrary to our hypothesis, there were no differences among groups on how often they reported using superstitious behaviors. The mean responses revealed that all three groups reported using superstitious behaviors “frequently” and perceived them to be “moderately effective.” The groups also agreed on how frequently they believe their peers utilize superstitious behaviors. We asked participants to respond to whether they had ever engaged in specific superstitious behaviors from a provided checklist. Musicians engaged in a smaller number of our presented superstitious behaviors than did the dancers and athletes,  $F(2,79) = 10.98, p = .000$ . This finding may suggest that musicians engage in different, less common superstitious behaviors than the other two groups; this possibility is supported by the range of responses we got in an open-ended question asking participants for examples of their own superstitious behaviors. In general, our data demonstrates that

superstitious behaviors are not limited to athletes. Athletes, dancers, and musicians reported using superstitious behaviors frequently, although our qualitative data suggests that the specific behaviors may be unique across groups. All three groups believed superstitious behaviors to be effective in improving performance, and this held true regardless of how much anxiety was felt prior to the performance. Self-reported 'skilled' athletes exhibited superstitious behaviors more often than less skilled athletes, raising the question of whether skill is a predictor or a consequence of believing in the power of superstitious behaviors.

#### **A Comparison of College versus Recreational Athletes: Motivation, Burn-Out, and Anxiety**

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Hannah Owen** (2013)

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 472 – Sleight)

We examined how college versus recreational athletes experience burn-out and also how burn-out relates to motivation, anxiety and sensitivity to criticism. Participants were 66 athletes, with a mean age of 21.14 (sd = 3.36). Participants responded to an online survey that included the following: the Sport Anxiety Scale to measure how anxious an athlete feels before or during competition (Victoria University), the Rosenberg (1965) Sensitivity to Criticism Scale, and the Eades Athlete Burnout Inventory (Eades, 1992) to assess how the athlete feels about sports participation. We also used the Sports Motivation Survey (Deci & Ryan, 1985) to assess different reasons that an athlete might participate in sports. College athletes had higher levels of burn-out and higher levels of sports anxiety. These two groups did not differ on their motivations for playing sports or how important their sports participation was to their parents. These findings suggest that athletes may begin playing sports for similar reasons; however, those who play at the college level for scholarship money may begin to experience more negative outcomes during sports participation. We also found that the experience of burn-out was associated with specific patterns of motivation. The more an athlete was motivated to play sports, because their identity was that of an athlete (i.e., identification motivation), the more burn-out they reported. The higher the burn-out, the more the athlete was playing a sport for internal, rather than external, reasons. Specifically, higher burn-out was positively correlated with an intrinsic motivation to accomplish an intrinsic motivation to experience stimulation and an intrinsic motivation to know. Perhaps athletes who are intrinsically motivated put a great deal of internal pressure on themselves to perform. This possibility is supported by the fact that the higher the burn-out, the higher the sports anxiety. In general, our data shows that young adults have many motives for playing sports. An intrinsic motivation was linked to a higher prevalence of burn-out, suggesting that an internal desire to play has the potential to turn into internal pressure. We also found that college athletes are at a higher risk to experience burn-out and anxiety, despite sharing similar motives for playing as recreational athletes.

#### **Finding the Surprise in Every Line: Peer Tutoring the Creative Writer**

*Presented at the Southeastern Writing Center Association (SWCA) Conference,*

*Nova Southeastern University, February, 2013*

**Student: Alexander Muller** (2014)

Faculty Mentor: Jane Smith, Ph.D.

CAS – Department of English

(WRIT 500 – Smith)

Present research has yet to explore the ways in which peer tutors may effectively assist the creative student writer. For this reason, I focus my discussion on establishing a methodology through which the peer tutor may lead a creative tutorial. Developing the ideas on creative pedagogy expressed by Rachel Peckham, Arthur Saltzman, Sondra Perl and Mimi Schwartz, I argue that the creative tutorial need not be different than its academic counterpart. In this essay, I seek to establish a context for the creative tutorial, give tutors a vocabulary that they may use to talk about creative writing, and establish Higher Order Concerns that they should focus on first-Structure/Organization, Development, and Voice/Language—which I have adopted from Donald A. McAndrew and Thomas J. Reigstad's method. I conclude that students, even up to the graduate level, suffer a shallow understanding of what creative writing can be due to the emphasis that our current educational system places on grades. Thus, it is important that the peer tutor can function as a creative mentor, challenging the creative student writer toward the betterment of his or her individual craft. In this way, we may hope to move toward a point where writing centers will be able to assist with creative work through tutorials that emphasize the revision process and the careful consideration of language construction. This will be a gradual progression; therefore, my goal in presenting this discussion is to start the conversation that will eventually lead to the appropriate methodology for tutoring the creative student writer.

#### **The “Armour of an Alienating Identity”: Deconstructing Marquez’s City of Mirrors Through Lacanian Theory**

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/*

*Graduate Research Conference, March, 2013*

**Student: Alexander Muller** (2014)

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Smith)

The French psychoanalyst Jacques Lacan theorized that the self of a subject is first formed when it notices its reflection in a mirror. At that moment it realizes its ideal form while simultaneously understanding that it will never be connected entirely to that form. Many of Lacan's theories on development of the self are interesting when considered in terms of post-colonial theory: the mirror represents technology brought over by colonizing forces; it is used to show the indigenous subject how it should look in terms of the colonizers (what Lacan would call the Symbolic Order); finally, the colonized are subjected to the ultimate weapon of the language of the colonizers, the final step in fragmenting the self in Lacanian terms. In this essay, I synthesize these two theoretical perspectives and plot the progression of Gabriel Garcia Marquez's Nobel Prize-Winning novel, *One Hundred Years of Solitude*, arguing that the formation (and destruction) of the collective self in the town of Macondo may be viewed in Lacanian terms, adding a psychological element to the postcolonial implications of the text.

#### **Pop Culture Blends and the Emergence of Online Dictionaries**

*Presented at the Big South Undergraduate Research Symposium, High Point University,*

*April, 2013*

**Student: Loren Mixon** (2014)

Faculty Mentor: Jo Koster, Ph.D.

CAS – Department of English

(ENGL 507 – Koster)

In the rapidly expanding digital age, the Internet aids the creation of new blends and changes in conversational lexis. The rapid change of language in this digital age allows us to examine how language reflects the culture in which we live as well as record the change in much greater detail than ever before. The development of pop culture lexical tools has created dictionaries that allow non-academics and amateur lexicographers to “define [their] world” and create an almost minute by minute representation of a changing lexis. With specific focus on the online crowd-sourced lexicons Urban Dictionary and Double-Tongued, this paper explores what the implications of new blends deriving from pop culture may be, specifically those pertaining to sex and appearance. My paper focuses on the emergence of blended words that not only reflect societal focus on sex and appearance but also demonstrate how rapidly updated dictionaries and amateur lexicographers are able to document the quickly changing pop culture lexis. Through examination of how online dictionaries allow language to be documented and validated by society, I argue that society now has a concrete and recordable way to document how it actually uses the language as opposed to records of how language has previously been used. We are able to record small changes in lexis that will allow us to study overarching changes over time with more detail and clarity.

#### **Cin-Dee-Rella: Examining Alice Walker’s “Everyday Use” as a Contemporary Retelling of the Rags to Riches Fairy Tale**

*Presented at the Southern Regional Honors Council Conference, April, 2013*

**Student: Alexander Muller** (2014)

Faculty Mentor: Ann Jordan

CAS – Department of English

(ENGL 211 – Jordan)

Recently, renewed interest in fairy tales has prompted a scholastic re-examination of literature in light of these classic texts. Especially in pieces where social issues such as race and gender are presented, the parallels of fairy tales can offer new meaning to both the classic and the contemporary work of literature. Alice Walker's 1973 short story “Everyday Use” is a prime example: by adjusting the fairy tale format to suit the modern reader, Walker reverses the characters of Dee and Maggie in the role of Cinderella and establishes the narrator, Mama, in the dual role of evil stepmother and fairy godmother. In this presentation, I argue that Walker establishes the Cinderella parallels in order to honor not only the African-American tradition of oral storytelling but also the universal tradition of using the fairy tale as a vessel for progressive thought and social commentary.

#### **The Causes and Consequences of a U.S. Platoon’s Refusing Orders: A Case Study from the Iraq War**

*Presented at the 2012 Winthrop McNair Summer Research Symposium, July, 2012; at the South Carolina Political Science Association Conference, March, 2013; at the Annual Meeting of the Northeastern Political Science Association, November, 2012; and at the Annual Meeting of the Eastern Sociological Society, March, 2013*

*Supported by the Winthrop University McNair Scholars Program and a Winthrop University Research Council Grant*

**Student: José G. Páramo** (2014) (McNair Scholar)

Faculty Mentor: Stephen Smith, Ph.D.

CAS – Department of Political Science

(PLSC 503 – Smith)

In life it is difficult to say no and to break away from the crowd in order to stand up to something that is clearly wrong. It is even more difficult to dissent for a person serving in the military and in particular while that person is deployed in a combat zone. This case study centers on the events of October, 2004 involving the 343<sup>rd</sup> Quartermaster Company of the U.S. Army. The case has been broken down into two main areas of focus. The first one identifies what really happened along with the circumstances behind the refusal of orders. The second one compares that particular incident to other unit refusals that have taken place in Iraq. The first area of focus explores the news media's version of events as opposed to what actually happened. The data consisted of interviews with soldiers of the company along with an in-depth analysis of available relevant newspaper articles and TV coverage. From a comparison of the news reports and the interview results we concluded that the failure had originated with the company commander due to poor leadership skills, which in turn caused a loss of trust and respect between the soldiers conducting the missions and the soldiers commanding the missions. We also studied when it is considered appropriate to say no to an order. In the second focus, a comparison was made between the 343<sup>rd</sup> Quartermaster Company's refusal and that of Second Platoon, Charlie Company and two other units. The comparison looked into the differences between a reserve and active duty unit as well as the difference between a soldier's mentality in a combat support unit and a combat unit. A conclusion made about these refusals was that they served to benefit the army's functionality by exposing issues such as poor leadership and the senseless use of soldiers and equipment. The research on the subject continues as does the search for additional documentation and subjects to interview. In addition there will be inclusion of blogs, comparisons to the Vietnam Era Underground G.I. Press, and comparisons to G.I. refusals in the Vietnam War.

#### **Four Poems: The Construction of a Personal Mythology**

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/*

*Graduate Research Conference Creative Writing Showcase, March, 2013*

**Student: Alexander Muller** (2014)

Faculty Mentor: Evelyne Weeks

CAS – Department of English

(WRIT 316 and WRIT 516 – Weeks)

This presentation includes four original poems on the theme of the synthesis of memory. Stylistically ranging from haiku stanzas to my own recently invented form of the “motet,” each poem blends images from the past and present to create a holistic understanding of scattered

moments. As a whole, the collection is a re-examination of memory attempting to construct a personal mythology. Exploring ideas such as reconciliation with the father and unity with the earth/mother, these poems express a calmness and beauty achieved only through nostalgia.

#### The Effect of Provided versus Self-Selected Music on Mood Change

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

*Winner of the Psi Chi Regional Research Award*

**Student: Amber Grant** (2014)

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

The purpose of the current study was to examine the influence of self-selected music versus provided music on mood change in young adults. We hypothesized that self-selected music would exert an even more powerful impact on mood improvement than provided music. Participants were 35 men and 59 women with a mean age of 19.79 (sd = 2.11). Participants first responded to the PANAS (Watson, Clark, & Tellegan, 1988) to assess their mood at the start of the experiment. Half of the participants then listened to Claire de Lune, a song noted for its happy sound qualities and tempo (Watson, 2009). The other half of the participants was instructed to select “happy music” on their own MP3 player and listen to it. All participants listened to music for two minutes and then completed the PANAS a second time. For each participant, we calculated a positive mood change and a negative mood change to assess how participants' mood changed from the beginning of the survey to the point immediately following the music listening period. We compared the two groups (self-selected music versus provided music) using an independent t-test and found that the two groups had similar positive and negative moods at the beginning of the study. The two groups did not differ in how much participants reported listening to music or having musical skill. In other words, the two experimental conditions shared similar characteristics. Results revealed that the group that listened to self-selected music had a significantly higher increase in positive mood than the provided music group,  $t(92) = -5.37, p = .000$ . There was no significant difference in the two groups' negative affect over time. In other words, listening to self-selected, happy music improved participants positive mood more than listening to provided, happy music. In general, our results demonstrated that happy music has the power to improve mood, and that self-selected music has a more powerful effect than provided music. These findings offer an interesting parallel to previously published research in this domain that has primarily utilized provided music. These findings also suggest that listening to music may be a therapeutic strategy that individuals can employ to self-manage mood.

#### The Effect of Priming Independence and Interdependence on Autonomy, Sociotropy, and Creativity

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Keisha Carden** (2014)

Faculty Mentor: Merry Sleight, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Sleight)

We hypothesized that participants primed for independence/autonomy would exhibit elevated scores for creativity while participants primed for interdependence/sociotropy would

exhibit lower levels for creativity. Participants were 30 men and 61 women. The mean age was 19.86 (sd = 1.86). Participants were randomly divided into one of two conditions. Condition one primed participants to think of themselves in an independent manner. Condition two primed participants to think of themselves in an interdependent manner (Kim, Vincent, & Goncalo, 2012). Participants completed a survey assessing perceptions of the self (PSI; autonomy and sociotropy; Robin et al., 1994) and creativity (RAT; Isen, Daubman, & Nowicki, 1987). Results revealed no difference between the two prime conditions. The prime may have been short-lived as the PSI questionnaire followed, containing all “I” statements that may have undone any prime instilled. Thus, the group primed to think dependently may have changed their viewpoint as they answered the PSI questions. Self-determination theory contains the premise that individuals are creatively motivated by the fundamental need for autonomy (Liu, Chen, & Yao, 2010); this theory, however, was not supported in our study. We hypothesized that participants primed with independence, versus interdependence, would have higher autonomy scores. This hypothesis was not supported. In contrast, we found that creativity correlated positively with higher scores in sociotropy and pleasing others. A possible explanation may be that those who care more about the opinions and satisfaction of others try harder than those who score higher in autonomy. Another explanation may be that self-concept may affect how adults are motivated creatively. It may be that those with an independent self-concept would score low in sociotropy but high in creativity (Kim, Vincent, & Goncalo, 2012.) In totality, it was unexpected that sociotropy would vary more over the sample than autonomy and may result from overall societal values of independence. As past research has predicted, sociotropy correlated with creativity, supporting the idea that those who are more concerned about social acceptance generally express higher levels of creativity and cognitive processes than those who are more independent and autonomous.

#### Holden Caulfield: Coming to Terms with His Own Sexuality

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Kari Chrisenberry** (2014)

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Bickford)

Much of the criticism surrounding *The Catcher in the Rye* primarily focuses on using a psychoanalytic approach, more specifically, Freudian psychoanalytic theory. But what critics fail to examine in terms of Holden's psychological state is his own repressed sexuality. While it is clear to the reader that Holden Caulfield's mental stability is questioned, it seems the several recurring incidents of trying to assure his audience of his age and his maturation and status as a man in the novel are more than just about him getting free drinks. He is constantly trying to assure himself that he is, indeed, a sexually mature, heterosexual male. Using queer theory and a close reading of the text, I conclude that Holden Caulfield's mental instability, compulsive lying, and, ultimately, his trip to the mental institution where he is at the beginning of Salinger's novel, are a direct result of his repressed homosexuality. He is constantly trying to assure himself that he is, indeed, a heterosexual male. This struggle, this disappointment and self-loathing he feels for himself, brings about his desire to protect the innocence of children like his little sister Phoebe; he is a sinner, and he wants to protect the other children from these forbidden desires. He and Phoebe trade places, and, at the end of the novel, he comes to terms with the fact that he cannot be the catcher, and that he himself is in need of being caught.

#### Investigations and Development of Strategies to Effectively Teach Introductory Chemistry through an Online Platform

*Presented at the Noyce Scholars Southeastern Regional Conference, March, 2013*

*Supported by the Winthrop University McNair Scholars Program*

**Student: Amy Moore** (2013)

Faculty Mentor: Nicholas E. Grosseohme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Education and technology over the past few decades have become increasingly entwined. With such a profound influence that these electronic learning environments are having, critical evaluation of effective strategies and the best practices are necessary. This study aims to explore how students perceive the online chemistry learning environment. This ongoing study has involved actively redesigning an introductory/preparatory chemistry and problem solving college class by incorporating technology in a way that maximizes the beneficial aspects of student engagement using student perception data collected via multiple surveys over the last nine months. Overall this study focuses on our investigation on how and if electronic material can replace traditional pedagogical methods. We hypothesize that this is only possible if the instructor is capable of anticipating student pitfalls; implementing strategies to improve comprehension, problem solving, and analytical skills; and foreseeing problems that may arise in an electronic learning environment. As such, to date, we have focused our efforts on investigating student perception to address each of the aspects as the first major stage of this overall project. This study has looked at how students have shown us that they want to learn and be engaged in chemistry through an electronic learning environment.

#### Experiential Education & Narrative Writing: Gateway to User Empathy

*Presented at the Interior Design Educators Council Conference, February, 2013 and at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

*Supported by a Winthrop University Research Council Grant*

**Student: Skylar Spies** (2013)

Faculty Mentor: Jennifer Belk

CVPA – Department of Design

The inclusion of experimental narrative writing opportunities throughout an educational program interjects critical thinking and emphasizes the importance of student experiences. Scenarios and simulation based activities were created to help students understand the role of feelings in shaping the human experience in relation to their physical environment. Using hands-on activities that create tangible associations with the disabled (or diverse user groups) is the most valuable technique for developing and encouraging positive action. Hands-on activities allow students to filter out personal biases and guide tactical decision making. Research indicates that autobiographical accounts of people create empathy and help students understand the world in different ways rather than relying on preconceived ideas; therefore, reflective narrative writing creates opportunities for students to identify with personas of the populations they research. The simulation and writing activities were implemented within a junior level interior design course relating to understanding building codes for various user groups in society. Pretests were administered to students related to understanding, empathy, and critical thinking in design as it relates to different user groups. Narrative assignments were integrated and user profiles were created for simulation activities based on the information gathered from pretests. Critical writing rubrics were developed and classroom teaching tools were researched and purchased for simulation activities. Students performed simulation activities, writing assignments, class discussions, and reflections. Post tests were administered

and evaluated to assess the success of narrative focused activities. The success of student development was tracked through the course and was compared to the previous year's final grades and course evaluations.

#### Drowning in the Human Voices: Hegemonic Masculinity in “The Love Song of J. Alfred Prufrock”

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/*

*Graduate Research Conference, March, 2013*

**Student: Mirielle Smith** (2013)

Faculty Mentor: Siobhan Brownson, Ph.D.

CAS – Department of English

T.S. Eliot's 1916 poem “The Love Song of J. Alfred Prufrock” contains an implicit promise in its title, one that is belied by the reality of the poem: that J. Alfred will engage in a love song, that he will pursue the object of his affection. In truth, Prufrock's tale is one of isolation, impotent obsession, and failure to act. He cannot bring himself to speak with women outside of his head (nor is he ever successful there) or to men who are real or imagined due to his perceived failure to be sufficiently masculine. Hegemonic masculinity refers to the dominant ideals of being a man held by a given society, ideals that are striven for by many but achieved by very few but are always present in society. So the question is two-fold: does J. Alfred Prufrock subscribe to hegemonic masculinity, and is he harmed or benefited by doing so? Prufrock's inability to make decisions, his fear of women, his solitary nature, and his lack of interaction with other men can all be tied to his unsuccessful devotion to the ideals of hegemonic masculinity that surround him. Prufrock attempts to live up to these ideals and is greatly damaged by his failure to do so.

#### Design and Synthesis of Zone 1 Modified Sphingosine Kinase Inhibitors

*Presented at the 64<sup>th</sup> Southeastern Regional Meeting of the American Chemical Society, November, 2012*

*Supported by an INBRE II Grant*

**Student: Stephanie Woodson** (2014)

Faculty Mentor: Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Sphingosine Kinase 1 (SK1) is an enzyme overexpressed in cancerous cells which regulates tumor growth; in healthy cells it controls proliferation and cell growth. SK1 is responsible for catalyzing the phosphorylation of sphingosine, which creates sphingosine-1-phosphate (S1P). S1P is a bioactive lipid that regulates proliferation, survival, and motility. The concentration of S1P and ceramide together regulate whether a cell can proliferate or be apoptotic. Several drugs have been identified that inhibit SK1; however, they were nonselective, inhibiting other kinases that are important in other biochemical processes. A few inhibitors have been identified that are selective and inhibit cancer cell proliferation and stimulating apoptosis. The main goal of this project is to design, synthesize, and characterize pure, potent and selective derivatives of the SKI-1 template inhibitor that may be more orally bioavailable. This research synthesizes six derivatives with various substitutions analyzing the impact on binding and overall inhibition effect.



### The Characterization, Synthesis, Purification and Isolation of Sphingosine Kinase Inhibitors

Presented at the 64<sup>th</sup> Southeastern Regional Meeting of the American Chemical Society, November, 2012

**Student: Louise Mount** (2014)

Faculty Mentor: Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Sphingolipids are a family of compounds that, in addition to being structural constituents of cell membranes, play key roles as signaling molecules. Two of these sphingolipid metabolites, ceramide and sphingosine 1-phosphate (SIP), have received considerable attention as integral mediators of cell survival. SKI has been identified as the regulator of this ceramide/SIP equilibrium and oncogenic making this enzyme a cancer treatment target. To this end, a number of novel inhibitors of SKI have been identified and evaluated by Smith et al with in vivo studies of SKI-I showing an IC50=1µM. Our synthetic scheme allows for numerous derivatives to be synthesized quickly and concisely in effort to increase the therapeutic effect and oral bioavailability of SKI-I. This project examines the incorporation of nitrogen-containing heterocycles to assess the pharmacophoric nature of this portion of the template structure so that an optimized inhibitor may be realized.

### Single-Pair Fret Analysis of Structures and Dynamics in Amyloid-Beta Dimers

Presented at the 244<sup>th</sup> ACS National Meeting and Exposition, Philadelphia, August, 2012

Supported by a National Science Foundation Grant

**Student: Emily Amenson** (2012)

Faculty Mentor: Robin Lammi, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Amyloid-beta (Abeta) is a self-associating protein of 39-43 amino acids that is linked to Alzheimer's disease (AD). Recently, it has been discovered that Abeta oligomers as small as dimers are closely correlated to the symptoms and progression of AD; however, little is known about their structures. We have used single-pair Forster Resonance Energy Transfer (spFRET) to investigate structures and dynamics in surface-tethered dimers, determining FRET efficiencies (EFRET) between associated donor- and acceptor-labeled peptides. A histogram of characteristic dimer EFRET values reveals two peaks near 0.38 and 0.58, perhaps representing two preferred dimer structures. Single-dimer histograms reveal that approximately 70 percent of dimers exhibit one characteristic EFRET value; the other 30 percent show two or three characteristic EFRET values, likely indicative of structural dynamics. Collectively, these investigations provide some of the first experimental insights into structures of neurodegenerative Abeta dimers and may lead to improved understanding and treatment of Alzheimer's disease.

### Synthesis and Evaluation of Potential Amyloid-Beta Aggregation Inhibitors

Presented at the 244<sup>th</sup> ACS National Meeting and Exposition, August, 2012

Supported by an SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)

**Student: Craig Stevens** (2013)

Faculty Mentor: Robin Lammi, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Amyloid-beta peptide (Abeta) is known to aggregate into insoluble fibrils, the primary component of extracellular senile plaques characteristic of Alzheimer's disease. As such, it may be therapeutic to inhibit Abeta aggregation. We have synthesized four potential inhibitors—the para-, meta- and ortho- isomers of terphenyl-3,3',4,4'-tetrol (PTT, MTT and OTT, respectively), as well as biphenyl-3,3',4,4'-tetrol (BPT). Inhibition was evaluated using the Congo red spectral shift assay. Congo red (CR) binds selectively to Abeta containing beta-sheet structure, resulting in a red-shift in the visible spectrum for the bound CR-Abeta complex; quantifying this spectral shift permits tracking of Abeta aggregation. Measurement of CR-Abeta levels in the absence and presence of varying inhibitor concentrations permits determination of inhibitor efficacies. All four compounds synthesized inhibit Abeta aggregation when present in excess. BPT is most successful, providing complete inhibition of aggregation at one molar equivalent and dose-dependent inhibition at sub-stoichiometric concentrations.

### Ultrastructure and Immunohistochemical Analyses of a Regenerative Myocardium

Presented at the American Association of Anatomists (AAA) Experimental Biology Conference, April, 2013

Supported by an NIH AREA Grant

**Student: Lyndsey Washburn**

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

CAS – Department of Biology

*Ciona intestinalis* is an invertebrate animal model system that is well characterized and has many advantages for the study of cardiovascular biology. A striking difference between most vertebrates and *Ciona* is that the *Ciona* myocardium is capable of regenerating cardiac myocytes throughout its lifespan, which makes the mechanisms of cardiac myocyte proliferation in *Ciona* intriguing. In order to stimulate regeneration, hearts were injured via ligation around the middle of the heart. After a 24 or 48 hour recovery period, damaged and control hearts were fixed for immunohistochemical or ultrastructure analyses. Preliminary TEM studies show degradation of the myofibrils and changes in the organization of mitochondria in cardiac myocytes. Interestingly, in addition to damaged myocytes, dividing myocytes are also evident and undifferentiated cells populate the damaged myocardium. Furthermore, thickening of the extracellular matrix is apparent, particularly within the lumen of the heart. Histological studies using Mayer's Hematoxylin and Eosin as well as Movat pentachrome stains show basic organization of the matrix components within the *Ciona* heart. Specific labeling of the myocardium using the MF20 antibody (Iowa Hybridoma Bank) shows organization of the cardiac myocytes. Studies using immunohistochemistry to identify proliferation and apoptosis in cardiac myocytes of damaged hearts are currently underway. Taken together, these studies will coordinate differences in cellular organization to ultrastructural changes in cardiac myocytes within the regenerative myocardium of *Ciona*, which will help to elucidate the basic mechanisms of cardiac myocyte proliferation.

### Gene Expression Analyses of a Heart Injury Model System in *Ciona intestinalis*

Presented at the American Association of Anatomists (AAA) Experimental Biology Conference, April, 2013

Supported by an NIH AREA Grant

**Student: Caitlin Manning** (2013)

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

CAS – Department of Biology

*Ciona intestinalis* is a useful invertebrate animal model system for studying the role of evolutionarily conserved genes among Chordates. In contrast to most vertebrates, *Ciona* hearts have the capacity for regeneration throughout their lifespan. An injury model system was used to stimulate regeneration in *Ciona* hearts. In order to identify genes that are involved in regeneration of the *Ciona* heart, microarray analysis was conducted on RNA from adult hearts with normal or damaged myocardium using custom Affymetrix GeneChips. Initial results indicate significant changes in the expression of 223 genes in hearts damaged by ligation in comparison to control hearts (fold change >2, p<0.01, Student's t-test) with limited false discovery (5.8 percent). Among these 223 genes, 117 have known orthologs to vertebrates, of which 68 genes were up-regulated and 49 genes were down-regulated. Altered orthologous genes were validated by RT-PCR. In addition, expression patterns of genes identified in the microarray study are currently being identified via in situ hybridization in juvenile and adult *Ciona* hearts. Genes of interest include: *ciFGF 9/16/20*, *ciFoxO*, and *ciFoxP*. In combination, these studies will help to elucidate the genetic basis of myocardial regeneration in *Ciona* and provide further insight into the role of orthologous genes in the regulation of cardiac myocyte proliferation.

### Men in Masks: Traditional Masculinity and Violations Thereof in Watchmen

Presented at the Fifth Annual Comics and Popular Arts Conference at Dragon\*Con, September, 2012

**Student: Mirielle Smith** (2013)

Faculty Mentors: Bradley Tripp, Ph.D. and Nakia Pope, Ph.D.

CAS – Honors Program

(HONR 204H – Pope and Tripp)

Unlike their lantern-jawed Silver Age counterparts, the men of Alan Moore and Dave Gibbons' *Watchmen* are not shining examples of traditional masculinity. The Minutemen are rife with behaviors considered “deviant” by mid-twentieth-century America: sadism, homosexuality, many suggestions of costume-related kinks. Far more than characters with these surface level “issues,” the characters of Adrian Veidt and Dan Dreiberg are affected by their inherent violations of the norms of traditional masculinity. While Dreiberg is able to recover his masculine identity and his sexual capabilities as he resumes his heroic persona, as the story progresses, Veidt becomes an increasingly divided figure as he plays the roles of both the masculine destroyer and the feminine protector. None of these non-traditional men were transformed by the masks they wore—they were drawn to them as a form of escape and opportunity. Though it is clear that they still have a bevy of issues, these men who are marginalized by their lack of adherence to the hegemonic masculinity ideals of twentieth century America are able to reclaim a semblance of a dominant masculine identity through their superhero personas.

### Thinking about Sensing How We Feel About Intuiting: The Importance of Tutors' Awareness of Their Own and Others' Personality Types

Presented at the Southeastern Writing Center Association Conference, February, 2013

**Student: Mirielle Smith** (2013)

Faculty Mentor: Jane B. Smith, Ph.D.

CAS – English

(WRIT 500 – Smith)

Though many writers and tutors are unaware or uninterested in their personality types, Myers-Briggs personality types factor into writing and tutoring sessions in significant ways. Beyond the more frequently examined question of Introvert/Extrovert interactions, the Sensing/Intuiting and Thinking/Feeling categories are important to understand. These subsets of personality type influence the way that students approach writing, shaping an argument, and receiving constructive criticism. More significantly, these subsets are highly influential in the way tutees react in sessions and the way that tutors navigate sessions. John K. DiTiberio and George H. Jensen discuss the differences between personality types and how people of each subset approach writing with a nice chart of how one can most effectively interact with people of those subsets in their work, including “Personality and Individual Writing Processes.” David J. Pittenger's “The Utility of the Myers-Briggs Type Indicator” is also a helpful resource on MBTI types, including how various types write and learn. However, more attention needs to be paid to the importance of tutors' awareness of their own personality type. The personality type of the tutor, particularly in the Sensing/Intuiting and Thinking/Feeling subsets, is an important factor for tutors to be aware of and has the potential to be extremely beneficial when properly utilized. Interviews with tutors will reveal the extent to which they are aware of their personality types, the role they feel personality types play in tutoring, and the extent to which they have experienced positive and negative impacts of personality type in sessions. It is important for tutors to be aware of personality types in order to be able to adapt themselves to best serve various tutees.

### “Another Sunny Day: High Seventy-Two, Low Seventy-Two, Not a Cloud in the Sky,” and Total Social Control: Edenic Imagery as the Signifier and Destroyer of Dystopian Societies

Presented at the Southern Regional Honors Council Conference, April, 2013

**Student: Mirielle Smith** (2013)

Faculty Mentor: Robert Prickett, Ph.D.

CAS – Department of English

(ENGL 310 – Prickett)

The all-powerful patriarch forbids the acquisition of knowledge and the use of freewill, then casts his subjects out with promises of pain and eventual death for disobeying him. This is the essential tale of many dystopian stories and an out of context reading of the Biblical Fall. The idea of utopia—meaning both “good place” and “no place”—has long been a part of Western literature. The concept of dystopia, the corrupted or destroyed utopia, frequently uses Eden as our ultimate example of paradise and thus our ultimate fear. Edenic imagery serves as a reminder that humanity has never achieved paradise, thus making its presence a warning sign in any so-called utopia. A corrupted paradise has no significance without an understanding of paradise itself. In addition to having this comparative value, the use of Edenic imagery reminds viewers that choice is one of the most essential steps in overcoming any dystopia.

### Queers in Class: Homophobia on College Campuses

*Presented at the South Carolina Anthropology Student Conference, April, 2013*

**Students: Margaret Ratcliff** (2015), **Udell Garrison** (2014), and **Benjamin Johnston** (2014)

Faculty Mentor: Sarah Quick, Ph.D.

CAS – Department of Sociology and Anthropology

(ANTH 516 – Quick)

Homophobia is defined as an extreme and irrational aversion to homosexuality and homosexual people. For openly homosexual people, the presence of homophobia in their community can be an obstacle they deal with daily. Fear of homophobia or personal experiences with homophobia can cause a person to avoid sharing the fact that they are homosexual with other people; in other words they are unwilling to “come out.”

Using a mixed method approach, our research team is investigating the presence of homophobia on Winthrop University campus. Participant observation, one-on-one interviews, and surveys from a random sample of students allow us to consider a wide swath of backgrounds and how these affect perceptions of homosexuality. In addition to collecting data on students' attitudes about homosexuality, our research gauges participants' political ideology, class, religious ideology and practice, and their field of study. By focusing on these key factors, we analyze what the strongest links are between a person's background and their view on homosexuality. Additionally, our analysis takes into account individual participants' experiences regarding homosexuality and homophobia and how these experiences impact their views on homosexuality.

### Women, the State, and Globalization

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Kayla Davis** (2014)

Faculty Mentor: Jennifer Leigh Disney, Ph.D.

CAS – Department of Political Science

Globally, women's groups have had to face distinct, although similar, challenges in dealing with their respective governments in their struggle for rights and representation. The State, I will argue, legislates the continuation and legitimization of patriarchy as a national interest in response to activism on the part of women. This paper examines the strategies employed by both the state and women in combating the obstacles they present to each other, and also the effects of globalization on this process; while there are many cases of the state being unresponsive or hostile to women's movements, there are just as many drawbacks to mobilizing outside the state in an increasingly global civil society. For women to successfully mobilize, strategies must be employed that are not totally reliant on the complicity of either the state or the global arena, as both of these areas can be problematic in terms of autonomous goal setting, methods of employment, and purpose for women's groups.

### Food Deserts: Environmental Assessment of Food Retailers in Rock Hill, S.C.

*Presented at the 2012 Winthrop McNair Summer Research Symposium, July, 2012 and at the Southeast Chapter of American College of Sports Medicine (SEACSM) Conference, February, 2013*

*Supported by the Winthrop University McNair Scholars Program*

**Student: Shantelle Igiozee** (2013) (**McNair Scholar**)

Faculty Mentor: Janet Wojcik, Ph.D.

COE – Department of Exercise Science

(MCNR 300 – Fortner-Wood)

The proximity of food retailers can be related to obesity. The purpose of this study is to perform an environment assessment by comparing food items at mainstream and fringe food retailers according to the availability, price and quality using the NEMS-S. The environment that surrounds food retailers can greatly affect their food choices. Food retailers outside one mile or greater in a disadvantaged neighborhood are labeled as food deserts. Each food retailer will be individually analyzed and mapped to indicate food deserts. Findings are expected to show lesser availability, elevated prices and lesser quality of food in disadvantaged communities.

### Stress, Abuse and Their Direct Effect on Affection in a Relationship

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: MaKencie Donald** (2015), **Chelsea Gilmore** (2014), and **Francheska Smith** (2014)

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Floyd, Boren, Hannawa, Hesse, McEwan, and Veksler (2009) recently examined the effects of physical affection, specifically kissing, on relationship satisfaction and stress. They found that participants who were asked to kiss their partner more frequently reported lower stress and were more satisfied in their relationships than individuals not given such instructions (Floyd, et al., 2009). Randall and Bodenmann (2009) found that stress is a threat to long-term relationships and relationship satisfaction. They explained that the stress of one partner often has a negative impact on the other partner and different stressors have differing levels of impact on the partner (Randall & Bodenmann, 2009). An additional factor in determining relationship satisfaction may be the presence of abuse in a relationship. Previous research has shown the effects of abuse, affection, and stress on satisfaction within romantic relationships. However, this research has not explored, to our knowledge, the negative effects of stress and abuse on affection. We hypothesized that stress and abuse negatively affect the affection shown in romantic relationships. Eighty undergraduate college students were recruited from three different Psychology courses. Participants were asked questions regarding their levels of stress, abuse and affection, either in a current or past relationship. We used regression analyses to predict whether people were less or more likely to display affection in relationships based on their levels of stress and abuse. When controlling for age, we found a significant relationship between stress and the amount of affection received in a romantic relationship. The more stress the participant reported, the more physical affection they received from their partner. Abuse was not found to be a significant predictor of physical affection in relationships. We believe that because the questionnaires were so long, participants may have become overwhelmed, which may have resulted in less thoughtful and accurate responses. Some participants also may have been uncomfortable with reporting about previous abuse on the

questionnaire and thus failed to report experienced abuse. A future direction of the study may be to examine women and men who are seeking assistance for abusive relationships to assess the relationship between stress, abuse and physical affection.

### The Ideal Body: A Race by Race Perspective

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Laura Cobranchi** (2014), **Danielle Silberman** (2014), **Alexa McCabe** (2014), and **Allison Toussant** (2014)

Faculty Mentor: Tara J. Collins, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Collins)

Body shape is often considered an important factor when assessing the attractiveness of oneself and others. Women from different ethnic backgrounds may consider different shapes more attractive, for example, African-American and Hispanic women may prefer to have a curvier body shape (Dawson-Andoh, Gray, Soto, Parker, 2011). Conversely, Caucasian and Asian American women may prefer to have a thinner body shape (Guan, Lee, Cole, 2012). We examined people's opinions regarding what body shape is most attractive for these ethnicities. We also examined specific body parts contributed to the attractiveness of these ethnicities. We predicted that participants would perceive African American and Hispanic women to be more attractive with a larger body shape and assign more importance to body parts associated with a curvier figure, compared to Caucasian and Asian women. Seventy-one university students (44 women and 27 men) completed our survey. To assess body shape, we used nine-point figure rating scale which presents body shapes ranging from 1= very underweight to 9= very overweight (Stunkard, Sorensen, & Schulsinger, 1983). Participants were asked to indicate the shape that they thought was most attractive for African-American, Caucasian, Hispanic, and Asian women. Participants were also asked to indicate how much each body part (breasts, buttocks, legs, waist, and hips) contributed to the attractiveness of each ethnic group. Participants rated African-American women as being most attractive at a significantly larger body size than Caucasian and Asian women and Caucasian women at a significantly larger size than Asian women. In addition, we found significant differences in the importance of the various body parts in determining attractiveness among different ethnicities. For example, participants indicated that buttocks and hips contribute more to the attractiveness of African-American women compared to Hispanic women, followed by Caucasian women, for whom it was rated as more important than for Asian women. In general, we found that people preferred African-American and Hispanic women to have curvier figures than Caucasian and Asian women. Future research in this area can potentially affect society's perception on body image among various ethnicities.

### Ibeji Figures: Spiritual Dwellings of the Twin Cult

*Presented at the Mint Museum Symposium, March, 2013*

**Student: Meghan Haller** (2013)

Faculty Mentor: Alice Burmeister, Ph.D.

CVPA – Department of Fine Arts

(ARTH 351 – Burmeister)

African art features strong influences derived from a belief system based in the Spirit World. The African Spirit World includes a broad range of spirit beings, including ancestors, nature spirits, and specific divinities. The Spirit World is depicted in a multitude of art forms, but the Yoruba people's use of ibeji twin figures is indicative of the importance placed on the

spirits of deceased twins. My research is focused on the cultural significance and history of how the cult of the twin spirits developed in the Yoruba community, how ibeji figures were used by researching the powers attributed to them, and how the depictions of ibeji figures changed over time due to the fluid nature of African culture. This topic was inspired by Taiwo Oruene's “Magical Powers of Twins in the Socio-Religious Beliefs of the Yoruba,” which was published in *Folklore* in 1985. Oruene contends that the Yoruba people are unique in that they are blessed with having a genetically high rate of twin births, which was not always viewed optimistically. Over time, however, the twins came to be revered enough to have ibeji figures carved to act as the dwelling for the spirit of the deceased twin. To further examine this claim, I reviewed other articles by scholars such as Philip M. Peek, Judith Perani, Fred T. Smith, Christopher Pinney, Nicolas Peterson, and Betsy D. Quick. Through my research, I came to the conclusion that the cult of the twins has been a developing idea in the Yoruba community and has continued and changed in depicting the figures due to stylization preferences by location. Due to the evolution of the art world, the media used to create ibeji figures have consequently evolved from the traditional wood carvings with beaded and painted details, to more contemporary forms including plastic dolls and photographs.

### The Harlot Effect: Gender and Personality Effects on Infidelity Distress

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Grace Griffin, Ashley Schaefer, and Anna Folkens**

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Hayes)

Previous research reveals that men are more distressed by physical infidelity and women are more distressed by emotional infidelity (Atkins, Baucom, & Jacobson, 2001). However, gender differences do not entirely explain attitudes toward infidelity. Researchers have implied that power plays a role in infidelity (Egan & Angus, 2003). Consistent with previous work, we hypothesized that women would be more upset by emotional infidelity and that men would be more upset by physical infidelity. We extended previous work by hypothesizing that beliefs in social inequality (SDO) and endorsement of traditional social roles (RWA) would account for additional variance in distress over physical infidelity but would not be related to distress over emotional infidelity. A sample of 162 undergraduate students (80 women) completed a survey measuring SDO (Kugler, Cooper, & Nosek, 2010), RWA (Duckitt & Sibley, 2010), and distress over infidelity with an attractive or unattractive cheating partner (Wade & Fowler, 2009). The results partially supported the first hypothesis; women were significantly more distressed by emotional infidelity than men, but only when the target was attractive. Contrary to prediction, men and women did not show a significant difference in distress over physical infidelity with either an attractive or unattractive target, suggesting that both genders are equally upset by physical infidelity. As predicted by the second hypothesis, after controlling for gender, SDO and RWA still accounted for a significant amount of variance in distress over physical infidelity with both an attractive and an unattractive cheating partner, but were not significant predictors of emotional infidelity. Furthermore, gender failed to account for a significant amount of the variance in distress over physical infidelity after controlling for SDO and RWA. Taken together, these results suggest that gender predicts distress over emotional infidelity, but its relationship with distress over physical infidelity is primarily due to personality differences in RWA and SDO.

### Contact with Homosexuals: Comparing System Justification and Contact Theories

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Students: Meghan Glanville and April Chavis**

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 471/472 – Hayes)

This study compared two different theories of the effects of contact with homosexuals on the attitudes toward homosexuals: Contact Theory and System Justification Theory. Contact Theory (Pettigrew, Tropp, Wagner, & Christ, 2011) states that attitudes toward disadvantaged groups, such as homosexuals, will improve with increased contact. System Justification Theory (Jost, Banaji & Nosek, 2004) also states that attitudes toward homosexuals will improve when an individual comes into contact with homosexuals that conform to gender role norms; however, System Justification Theory predicts that attitudes will become more negative if the contact is with homosexuals who counter the gender role norms because they are viewed as threats to our social systems, and a subconscious reaction takes place to defend the status quo; i.e., heterosexuality. We hypothesized that 1) individuals who scored high on System Justification beliefs (resistance to change and opposition to equality) would hold more negative attitudes toward homosexuals; 2) participants who scored high on these ideological belief systems will report less direct and indirect contact with homosexuals; and 3) we explored whether contact with stereotypical homosexuals in the media would interact with system justification beliefs to produce more negative attitudes (as predicted by System Justification Theory) or more positive attitudes (as predicted by Contact Theory). To examine these competing predictions, 226 American adults (96 men) completed an online survey measuring system justification beliefs, contact with homosexuals, and attitudes toward gay men. As predicted by the first hypothesis, system justification beliefs were correlated significantly with negative attitudes toward homosexuals. The second hypothesis was partially supported. Resistance to change, but not opposition to equality, was negatively correlated with contact with homosexuals. Finally, a significant interaction between system justification beliefs and contact with non-stereotypical homosexuals was found as predicted by both Contact Theory and System Justification Theory. More importantly, a significant interaction between system justification beliefs and contact with stereotypical homosexuals was found as predicted only by Contact Theory. Examining the components of these ideological belief systems revealed that resistance to change was the primary factor affecting attitudes toward homosexuals as predicted by Contact Theory.

### Moral Foundations Theory and the Role of Motivation in Political Ideology

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Anna Folkens**

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 472 – Hayes and Sinn)

Several theories have attempted to examine differing ideological beliefs. Moral Foundations theories (MFT; e.g. Graham, Haidt & Nosek, 2009) describe ideological beliefs as resulting from different moral perceptions, functioning as moral taste buds that affect how individuals perceive the world in terms of what is morally good and bad. These differences in moral perceptions between liberals and conservatives are mostly innate but are also influenced by early experiences, such that they are stable in adulthood (Graham et al., 2009). However, some studies have found that situations, such as those evoking fear, can affect ideological beliefs

(Jost, Glaser, Kruglanski, & Sulloway, 2003), meaning that they are not as stable as MFT assert. In addition, MFT do not capture the important role of psychological needs, motivations, and emotions in determining ideological beliefs. Self-determination Theory (SDT) addresses the motivations that drive existential needs. SDT proposes that all individuals have both intrinsic and extrinsic motivations (Kasser & Ryan, 1996) but tend to be motivated by one more than the other. Intrinsic motivation is based on fulfilling internal goals, such as intimacy, community, and self-acceptance. Extrinsic motivation is based on external factors, such as wealth, power, and attractiveness (Deci & Ryan, 2000). Sheldon and Nichols (2009) found dispositional differences in motivation between Republicans, who exhibit more extrinsic motivation, and Democrats, who exhibit more intrinsic motivations. Based on these dispositional differences, we hypothesized that intrinsic motivation would correlate with MFT’s individualizing foundations and extrinsic motivation would correlate with MFT’s binding foundations. Fifty three US adults completed an online survey measuring intrinsic/extrinsic motivation and the moral foundations. As predicted, intrinsic motivation exhibited significant positive correlations with the two individualizing foundations. The correlations between extrinsic motivation and the binding foundations are also significant as predicted. Hierarchical regression analyses revealed that, while the moral foundations accounted for variance in self-reported political orientation above and beyond that accounted for by motivation, the reverse was not true. Therefore, ideological beliefs may not be as fixed as MFT propose. Instead, needs and emotions, not just differing moral perceptions, may explain differing ideological beliefs.

### Campus Involvement and Risky Behaviors in College Students

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Symone Calhoun**

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Hayes)

Involved students—those who devote considerable energy to academics, spend significant time on campus, participate actively in student organizations and activities, and interact often with faculty—typically do better in college (Astin, 1984). However, research has shown young adults and teenagers have the highest percentage of risky behaviors (Gruber, 2001). We explored whether there was a relationship between campus involvement and risky behaviors. Participants included 168 undergraduate students (117 women). Campus affiliations were organized into seven groups: Unaffiliated, Campus Ministry, Club Sports, Interest Groups, Greeks, Honorary Students, and Service and Advocacy. We assessed four clusters of risky behaviors: violence, drug use, alcohol consumption, and sexual activity. The type of campus involvement was associated with differences in some risky behaviors. There were no significant differences in any of the violent behaviors based on campus involvement. Chewing tobacco and cocaine use differed significantly across the types of campus involvement. Greeks used more chewing tobacco than all the other groups and Honorary students used more cocaine than everyone else except Greeks, who were the same as everyone else. Marijuana and cigarette usage did not differ significantly across the types of campus involvement. Light and Heavy drinking were significantly different across the types of campus involvement. Greeks engage in more light drinking than all other groups and more heavy drinking than campus ministry, interest, and service groups. Honorary groups engaged in more heavy drinking than campus ministry, service, interests, and club sports, but not more than Greeks. The frequency of heterosexual sex differed significantly based on campus involvement. Greeks were having more heterosexual sex than Campus Ministry. The frequency of homosexual sex was not significantly different based on campus involvement. A correlation analysis revealed that the amount of involvement was significantly correlated with: chewing tobacco, using cocaine,

consuming alcohol (light and heavy drinking), and engaging in homosexual sex. Taken together, these results suggest that greater campus involvement may result in greater risk-taking, with the type of risk-taking dependent on the type of campus involvement.

### Effects of Video Game Genre on GPA and Social Satisfaction

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

*Winner of the CEPO Research Award*

**Student: Symone Calhoun**

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

(PSYC 302 – Hayes)

Video games are an increasingly popular leisure activity. Although 8.5 percent of individuals in the US aged 8 to 18 show signs of addiction (Gentile, 2009), media and research psychologists typically focus only on the effects of violent video games on aggression and, as a result, there is little research on how video games affect other outcomes. In particular, as today’s college students who grew up playing video games enter college, it is important to understand gaming’s impact on both academic success and social satisfaction. This study explored which gamers, as classified by game preference, were more likely to struggle academically and socially. We surveyed 126 college students about their gaming habits, genre preference, grade point average (GPA), and social satisfaction. We condensed the 17 genres into four game types based on based on game content and the skills required to play (Role Playing Games, Action, Sports, and Arcade). The addition of one nongaming group composed of respondents who responded as nongaming or that they spent zero hours per week gaming yielded five game genre groups. Participants also completed a social connectedness scale, which asked participants to rate their feelings of connectedness with friends, family, and community. Self-reported GPA was used as a measure of academic success. There were significant differences in GPA based on game genre. Those who preferred action games had significantly lower GPAs than nongaming participants, those who preferred RPGs and those who preferred arcade games did not differ, indicating that video game preference may indicate more fundamental individual differences associated with academic outcomes. Social satisfaction was not correlated with gaming alone, but was negatively correlated with gaming with others, even after controlling for time spent with family and friends outside of gaming, which seems to indicate that people who are dissatisfied with their social lives may be using online/multiplayer gaming as a source of social interaction while gaming alone has no such motivation. These results indicate that the popular tendency to group all gamers together when evaluating the effects of gaming misses critical differences associated with the types of games and how they are played.

### Students with Learning Disabilities’ Perceptions: Utility and Use of University Accommodations

*Presented at the 2012 Winthrop McNair Summer Research Symposium, July, 2012*

**Student: Kierra James** (2013)

Faculty Mentor: Antigo Martin-Delaney, Ph.D.

CAS – Department of Psychology

(MCNR 300 – Fortner-Wood)

This study examined student perceptions on accommodations given by the Office of Disability Services (ODS) to students with various learning disabilities. This study had two research questions: “Which accommodations are necessary for students with learning disabilities at

a medium-sized Southeastern university?” and “Which accommodations are utilized most often by students with learning disabilities at a medium-sized Southeastern university?” In order for students with learning disabilities to have equal opportunity to compete with non-disabled students, universities’ ODS must first know which accommodations are actually benefitting students. To answer this question, this research created a 29 item Likert-type within-subject questionnaire on Survey Gizmo. The link to the questionnaire was sent to potential participants by the Director of ODS. Of the 162 students contacted there were 24 participants who completed and returned this questionnaire. The ODS at this university proved to be more adept at accommodating students than universities in the past and answers to the two research questions posed by this study may have an impact on Offices of Disability Services on university campuses. This study found support of the hypothesis that students with learning disabilities are more likely to benefit from and utilize testing accommodations than other supports/accommodations provided at the post-secondary level.

### Towards an Inclusive Discourse Ethic

*Presented at the South Carolina Political Science Association Conference, March, 2013*

*Supported by the Winthrop University McNair Scholars Program*

**Student: John Huffman** (2012) (McNair Scholar)

Faculty Mentor: Michael Lipscomb, Ph.D.

CAS – Department of Political Science

This article outlines the terms of a more inclusive discourse ethic that might inform efforts at greater democratic inclusion utilizing the ideal speech situation of Jurgen Habermas. Developing an open model discourse ethic requires an understanding of both the evolution of democracy and the existing socio-political climate within western democratic culture. Furthermore, such a model must address two major dilemmas of democracy in the tensions that lie between positive and negative liberties and the competition between individual and community interests. At present, societies are struggling to meet the expectations of new constituents. Meeting the representative needs of the masses worldwide is but one concern, and attention must also be given to the environment and non-human species that comprise an entire community presently outside the current domain of democratic representation. Though contemporary democracies are struggling to include previously under-represented groups and in the face of tough environmental challenges, the political concerns of large segments of these societies and the environment are inherently absent from the deliberation process. An open model discourse ethic towards a more inclusive democracy could mitigate against some of these challenges.

### Student Engagement and Academic Achievement

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Allie Briggs** (2013)

Faculty Mentors: Scott Huffmon, Ph.D. and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Huffmon and Lipscomb)

The “WU Engagement Survey” was a web survey that examined the attitudes and behaviors of Winthrop undergraduates’ academic lifestyles compared with their nonacademic lifestyles. This survey was designed to replicate previous empirical investigations into levels of student engagement and its relationship to academic success. “Factor analysis” was used to test the significance of a group of variable questions and their interconnectedness to a common variable. This variable, “engagement,” functioned as the dependent variable to be compared with student’s socio-economic attributes and their academic status.

### The Symbolic Language of St. Ivo: Borromini and the Barberini Bees

*Presented at the Seventh Annual Meeting of the CVPA Emerging Scholars and Teachers in the Arts, February, 2013*

**Student: Danielle Herring** (2013)

Faculty Mentor: Laura Dufresne, Ph.D.

CVPA – Department of Fine Arts

(ARTH 346 – Dufresne)

Francesco Borromini, a Baroque architect, specialized in mixing Classical architectural styles with geometric shapes and symbolic imagery. His styles were very distinctive from other artists of this time, which gave Borromini the ability to create the symbolic imagery the St. Ivo church, which he is famous for today. My research is based around the Barberini bees and how they represented the Barberini family as a form of insurance to guarantee patronage of St. Ivo's church. The bees were prevalent in the art work, the architecture and the ground plan. Through research, I concluded that in order to understand the architectural features of this church, you must have a basic understanding of the symbolic imagery that was iconic for this time. My topic was inspired by John Beldon Scott's article, "S. Ivo Sapienza and Borromini's Symbolic Language," published in *The Journal of the Society of Architectural Historians* in 1982. To further expand my research, I reviewed other articles, including those written by Anne Sutherland Harris, Kevin Orlin Johnson, and Pierre Ruffiniere. This paper explains the symbolic language associated with St. Ivo's church and the designs that were relevant to the iconography of the time. My research also led me to the iconography of the spiral lantern located on the top of St. Ivo's church, which is believed to represent charity. The spiral, which was shaped like a flaming spiral and referred to as the triple-crowned papal tiara, represented St. Ivo's patron saint—St. Yves Helory de Kermartin of Brittany. The architectural features represented the family's God-given right to govern the people of the church and guaranteed the patronage of the Barberini family.

### Blurring the Line between Practical and Strategic Gender Interests: Revisiting Molyneux and Alvarez

*Presented at the South Carolina Political Science Association Conference, March, 2013*

**Student: Laura Jane Burgess** (2013)

Faculty Mentor: Jennifer Leigh Disney, Ph.D.

CAS – Department of Political Science

The definition of women's movements has been a point of interest in women's and gender studies. Currently the prevailing belief is that women's movements can address either practical or strategic interests exclusively. These distinctions have been used as the theoretical framework through which scholars conceptualize the nature of women's movements. The distinction between women's movements has been fostered by Maxine Molyneux's attempt to create a distinction between gender interests which address the immediate and perceived needs of women and gender interests which challenge patriarchy and can be considered "feminist." I question the exclusivity of practical and strategic interests and Alvarez's similarly employed theoretical distinctions of feminine organizing and feminist organizing in EnGendering Democracy in Brazil. Using the tenet of intersectionality, I argue that Molyneux's and Alvarez's distinctions require modification because you cannot extrapolate that gender interests are the same for all women. Local patriarchal ideologies relegate women to the domestic sphere and, by proxy of mobilization for childcare facilities that become politicized, the practical interests of marginalized women become public and should be considered strategic as well.

### The Hedgehog Pathway in Macrostomum Lignano (Platyhelminthes)

*Presented at the S.C. INBRE Spring Symposium, April, 2013*

*Supported by the S.C. INBRE*

**Student: Brian Hong** (2013)

Faculty Mentor: Julian Smith III, Ph.D.

CAS – Department of Biology

The Hedgehog pathway is responsible for regulation of the alignment and arrangement of organs in embryonic development; this includes developing the correct size and location. In Drosophila, Hedgehog also functions with the Wingless protein to develop wing formation. In annelids, Hedgehog aids in the segmentation of the body. Most of the research involving Hedgehog and humans is centered on the belief that it may play a role in basal cell carcinoma, the most common type of skin cancer. Hedgehog signaling is initiated when the signaling protein, Hedgehog (hh) binds to its receptor Patched (ptc). Once hh is bound to ptc, ptc stops inhibiting the protein Smoothed (smo). Smoothed then activates a signaling cascade, which subsequently leads to the activation of specific genes, such as those controlling cell replication. The ptc gene is, itself, a target of hh signaling, and ptc transcription is increased when hh signaling is activated. Conversely, ptc transcription is decreased when hh is inhibited. In order to find possible orthologues of hh, ptc, and smo in *Macrostomum lignano* (M. lignano), *Danio rerio* orthologues of each gene were blasted against the M. lignano transcriptome. This gave a list of possible M. lignano orthologues. These orthologues were further narrowed down by examining for domains and characteristics specific to each of the proteins. Using the most likely orthologues, primers were designed for use in the polymerase chain reaction (PCR). Sequences recovered will be used to design primers for semi-quantitative PCR to analyze possible changes in ptc expression in response to the hh pathway inhibitor, cyclopamine (we expect ptc expression to be reduced) and the hh pathway activator, purmorphamine (we expect ptc expression to increase). This and future studies of the hh pathway, *M. lignano*, a comparatively primitive animal, should shed light on the evolution of this important signaling pathway.

### Molecular Phylogenetic Analysis of Family Schizorhynchidae (Platyhelminthes)

*Presented at the 15<sup>th</sup> International Meiofauna Conference, July, 2013*

**Student: Dainiel Roberts** (2013)

Faculty Mentor: Julian Smith III, Ph.D.

CAS – Department of Biology

The family Schizorhynchidae is a little-studied group of interstitial flatworms, and like other meiofaunal organisms, is microscopic in size and lives between sand grains on marine beaches. They are among the top predators in the meiofaunal food web, using a muscular proboscis to snare (and sometimes poison) prey, which is then swallowed alive. Understanding the species diversity and the evolutionary relationships within this family of flatworms is vital to a better understanding of meiofaunal ecology and its evolutionary origins. However, little attention has been given to Schizorhynchidae in recent research. The last phylogenetic summary was published in 1970 and was mainly concerned with morphological details of the proboscis. Previous work done in this lab using molecular phylogeny seems to be inconsistent with this earlier research's conclusions about members of this family. Of the nearly 100 known species, only 20 have 18S rDNA on file in GenBank. This study was done to develop a more accurate phylogenetic tree-based analysis of 18S rDNA from the 20 species obtained from Genbank and the additional 30 species collected from the North Carolina coast. Of the 30 species collected, only two have been formally described. Therefore this study will be used to guide the more detailed morphological study of each species using confocal and TEM microscopy along with further molecular studies.

### Moral Foundations versus Socially Motivated Cognition: Testing Competing Theories of Ideology with Regulatory Focus

*Presented at the Annual Meeting of the Southeastern Psychological Association, March, 2013*

**Student: Keisha Carden** (2014)

Faculty Mentor: Jeffrey Sinn, Ph.D. and Matthew Hayes, Ph.D.

CAS – Department of Psychology

Moral Foundations Theory (MFT) strives to explain all moral motivation, and the differences between liberals and conservatives, with five moral foundations, asserting liberals rely primarily on the two "Individualizing" foundations (Harm/Care and Fairness/Reciprocity), while conservatives rely on three additional "Binding" foundations (Authority/Respect, Ingroup/Loyalty, and Purity/Sanctity). These ideologies provide two different mechanisms to achieve morality, defined as the suppression of selfishness, that makes social life possible (Graham, Haidt, & Nosek, 2009; Haidt, 2012, p.70). In contrast to MFT, Jost and colleagues (Jost, Glaser, Kruglanski, & Sulloway, 2003) explain political conservatism as socially motivated cognition (SMC) arising in response to a heightened sense of threat and/or epistemic uncertainty to provide palliative relief. Consistent with the SMC view, regulatory focus research has found conservatives more motivated by a prevention/avoidance orientation and liberals by promotion/approach orientation (Janoff-Bulman, 2009). In contrast, MFT would predict no difference in motivational orientation as it sees ideology arising from foundational perceptual differences in moral orientation. Following MSC, we hypothesized that endorsement of the Binding foundations would correlate with a prevention orientation and that the Individualizing foundations would correlate with a promotion orientation. Participants (n=338) completed online surveys, completing multiple scales measuring prevention and promotion motivation (PPS; Lockwood, Jordan, & Kunda, 2002), regulatory focus (RFQ; Higgins et al, 2001), reciprocity norm endorsement, and moral foundations (Graham et al, 2009). As predicted, MF Binding correlated significantly with prevention on both the PPS,  $r(336) = .170, p < .01$ , and RFQ,  $r(336) = .119, p < .05$ . Also as predicted, MF Individualizing correlated with promotion on the PPS,  $r(336) = .218, p < .001$ , but not on the RFQ,  $r(336) = .031, n.s.$  Unexpectedly, MF Individualizing correlated with Prevention on the PPS,  $r(336) = .245, p < .001$ . Overall, three of the four hypotheses were supported. The unexpected correlation between PPS-prevention and MF Individualizing may stem from the negative framing of most MF Individualizing items. Overall, the results provide greater support for the SMC model of ideology over the MFT.

### The Lack of a Governess in Wuthering Heights

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Kalene McDonnell** (2013)

Faculty Mentor: Leslie Bickford, Ph.D.

CAS – Department of English

(ENGL 300 – Bickford)

Most readers and critics of Emily Brontë's Wuthering Heights have their own opinion on what, if anything, went wrong in Cathy and Heathcliff's relationship. Regardless of their attitude towards the outcome, they usually lay the blame on something or someone. The absence of supervision and guidance of children in Wuthering Heights is apparent, as is a governess in the Earnshaw household. This article discusses how following the rules of the class structure, along with the presence of a governess in Cathy and Heathcliff's lives as children, or at least in Cathy's life, would have provided the attention to and education on social structure

the two needed in order to be less influenced by the actual class system itself. By taking a Marxist approach and looking at the role of a governess in society, this paper evaluates the social status of the Earnshaw family, Cathy's attempt to conform to the the class system, the time frame in which the novel was set, and the era in which Emily Brontë lived to determine that the children would have been less influenced by the social and class structure given the proper education of it and supervision necessary of children. Had Cathy and Heathcliff been educated on the rules of class structure, they would have been kept inside and away from Thrushcross Grange, allowing them the possibility of remaining ignorant of the outside world and avoiding the chain reaction of events that followed their realization of social hierarchy.

### Facebook: A New Diary?

*McNair Scholars Research Conference at the University of Maryland Baltimore County, September, 2012*

**Student: Dwana David** (2013) (McNair Scholar)

Faculty Mentor: Matthew Hayes, Ph.D.

CAS – Department of Psychology

The present study examined the effects of Facebook and related those effects to therapeutic journaling. This study also investigated the effects on two separate age groups, 18-29 and 30 and above. Participants were 92 Facebook users who agreed to take a brief survey. Participants answered questions about their Facebook use. One question asked participants if their Facebook statuses typically involved deep thought. The survey then asked participants how they felt after posting a status about a success or failure. The results indicated that Facebook users who put deep thought and reflection into their statuses do not receive journaling benefits; rather, they reported feeling the same after making the post. Facebook users who do not reflect in their statuses feel worse after posting. There was no difference between the two age groups. This study suggests that being reflective on Facebook is not helpful, but posting non-reflective thoughts may have disadvantages.

### Sherlock Holmes, Psychology, and Pop Culture

*Presented at the Eighth Annual Winthrop University Department of English Undergraduate/Graduate Research Conference, March, 2013*

**Student: Evan O'Neal** (2014)

Faculty Mentor: Casey Cothran, Ph.D.

CAS – Department of English

Sherlock Holmes, one of literature's most beloved and enduring characters, has found his way into countless mediums of entertainment including a recent explosion of on-screen adaptations. Each new visual reincarnation of Holmes presents the viewer with a different take on the character with varying degrees of success and accuracy. Versions of Holmes found within television dramas and movies today exaggerate and exploit quirks and flaws of Holmes to the level of diagnosable psychological disorders for the sake of anchoring the character into a persona that will please current fads in popular culture. Certain incarnations clearly display these disorders for the viewer to interpret, such as Dr. Gregory House's narcissism on the medical mystery drama, *House*. Some versions give the impression of a strong neurotic disorder more likely to be found within the character of a mad scientist, particularly the version of Holmes featured in the new Warner Bros. franchise. Others still explicitly state their own psychological issues to the point of self-diagnoses as famously demonstrated by Benedict Cumberbatch's character in Steven Moffat's *Sherlock*. Each version of Holmes proves to be a result of entertainment demands and popular fiction. Though none of these depictions are

entirely accurate, this paper examines various interpretations of Sir Arthur Conan Doyle’s famous crime-solver from both a psychological and literary perspective to demonstrate just how flexible and complex the real Sherlock Holmes truly is, as he is molded into the roles of a medical doctor, a crazed action hero, and a modern-day crime-solving sociopath.

#### Differences in Accent Flexibility

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Evan O’Neal** (2014)

Faculty Mentor: Jo Koster, Ph.D.

CAS – Department of English

(ENGL 507 – Koster)

This paper attempts to correct the misconception regarding the subject of communication that a basic knowledge of a particular language is all one needs to navigate a foreign culture. Dialects and accents create subsets of language that may prove to be major stumbling blocks in communication for traveling or immigrating speakers. These “outsiders” often find themselves picking up the accents of native speakers and sounding increasingly similar to those around them. Others maintain their original accent, picking up only a few elements of the accent they are being exposed to. Howard Giles’ “Communication Accommodation” theory states that this phenomenon is caused by the conscious or subconscious desire to accommodate others through speech patterns. Differences may be explained by applying this theory to varying degrees of nationality and desire for self-preservation. Individuals who wish to become one with a foreign culture will allow their accents to bend while those who see their heritage as a key part of their identity are more likely to fight to keep their native accents. This paper also utilizes a case study, by Katharine W. Jones, of United Kingdom-to-America immigrants and British individuals who have spent extensive time in America. Jones’s case study reveals that there is some truth beyond these concepts, and it also provides an astonishing look at the relationship between nationality, accent, and identity.

#### “Ax the trunk, the limb will die”: Tree Imagery in Toni Morrison’s “Beloved”

*Presented at the Big South Undergraduate Research Symposium, High Point University, April, 2013*

**Student: Jeanne Stroud** (2014)

Faculty Mentor: Kelly Richardson, Ph.D.

CAS – Department of English

(ENGL 324 – Richardson)

The purpose of this paper is to highlight the tree imagery that Toni Morrison uses in *Be-loved*—particularly the mentions of trees, woods, and leaves—and to argue that these images are symbols of strength, safety, and faith, respectively. Despite the strong presence of trees in the novel (one hundred and five mentions of trees, fifteen mentions of woods, twenty-one mentions of leaves, and others), the body of scholarship on *Beloved* generally lacks a critical

reading and analysis of the arboreal images. The paper is organized into three sections. In the first section, I argue that Morrison invokes tree images at times when characters need strength and at times when the strength of white dominance overpowers the characters. In the second section, I explain that instead of referring to individual trees, sometimes Morrison writes about woods, and I assert that these woods are vehicles of safety to the characters in *Beloved*. Finally, I explain in the third section, that Morrison at times will only refer to the leaves of the trees, and that these images are just as significant as the images of trees in their entirety. Morrison writes about leaves to allude to faith; just as leaves fall from trees and are grown back again, so too does faith fall from peoples’ lives and is grown back again. The leaves in *Beloved* symbolize both Christian and humanistic faith. I conclude that the arboreal images unify the text and make the story more accessible.

#### The Ball Game: Ritual and Cultural Relevance

*Presented at the South Carolina Anthropology Student Conference, Winthrop University, April, 2013*

**Student: Brandi Beasley** (2013)

Faculty Mentor: Richard J. Chacon, Ph.D.

CAS – Department of Sociology and Anthropology

The ball game was an activity that had significant religious and political connotations within the pre-contact cultures of Mesoamerica. From a religious perspective the ball game was important due to its association with the Hero Twins myth, part of the creation story found in the Popol Vuh. Additionally, the game served as a mechanism for divination. The importance of the ball game from a political perspective was its ability to serve as a method of conflict resolution in lieu of all out warfare. Tournaments sponsored by elites may have been used as means for enhancing social status and allowed players to gain prestige. Much of our understanding of the ball game comes from ethnohistorical documents and archaeological evidence and interpretation. While these sources provide valuable information, there are many aspects of the game that remain unknown. For example, no detailed accounts of how the game was played or of how scores were kept are known to exist. To fill this lacuna, research on the ball game as played in modern day Mexico should be conducted. Data on contemporary manifestations of the ball game (such as pelota Mixteca) provide information useful in attempts to reconstruct the ball game’s pre-contact rules and scorekeeping protocols. Lastly, the ballgame’s role as an ethnic marker will be addressed.

#### Atelerix Albiventris

*Presented at the National Student Electronic Music Event, March, 2013*

**Student: Daniel S. Strokis** (2013)

Faculty Mentors: Ronald Keith Parks, Ph.D. and Leonard Mark Lewis, D.M.A.

CVPA – Department of Music

(MUST 532 – Parks)

Atelerix Albiventris, a composition for digital audio, juxtaposes organic sounds with digitally manipulated sounds. It explores the concept of taking non-traditional material and applying it to a traditional form. In this case, the work is in binary form. The first section uses sounds layered in different ways, but does not manipulate the sounds from the source material; the sounds remain organic and unchanged. The second section uses one sound that is digitally manipulated. Download music at: <http://winthrop.edu/cvpa/music/default.aspx?id=28710>

## Other Student/Faculty Collaborations

#### Community Asset Mapping for Early Career Exploration

**Student: Ashley Sineath** (2013)

Faculty Mentor: Jennifer Belk

CVPA – Department of Design

Students are often uncertain about what career paths and opportunities are available to them. Social media has the ability to connect students with college educators and professionals in any identified industry. It is vital that students communicate with industry professionals in order to obtain internships, job experience, and professional events within a particular industry. By accessing legitimate information about careers through social media contacts, student will be better able to choose their course of study and universities will retain more students in their programs. Social media connectivity and career research help when finding detailed information and professionals in certain industries. However, it is clear that some students wait until the last minute to research a career path, and those students are less confident going into professions upon graduation. This presentation will explain how to research careers as early as Elementary School and Middle School through social media use. Survey results will be shared regarding college freshman, seniors, and graduates’ opinions on personal and professional networking, benefits of using LinkedIn, the best time to research a career path, job experience through internships, etc. Also, statistics on universities within the Big South Conference will be analyzed concerning the size of school and percentage of student on LinkedIn. These results will be compiled in order to show the current trends in social media use as a tool for career research.

#### Social Media in Participatory Sensing Applications

*Supported by the University of North Carolina at Charlotte (UNCC) Research Experience for Undergraduates (REU) program, funded by the National Science Foundation (NSF)*

**Student: David Burlinson** (2014)

Faculty Mentors: Marguerite Doman Ph.D.; Scott Hegen (UNC Charlotte);

Jamie Payton (UNC Charlotte)

CBA – Department of Computer Science and Quantitative Methods

Participatory sensing is an approach to large-scale data collection and interpretation in which volunteers gather, share, and analyze information about their surroundings through mobile devices. A key challenge to organizers of participatory sensing campaigns is the task of identifying and recruiting appropriate participants that volunteer data collected by sensors on their mobile phones; this can be difficult, as there is no standard method for recruitment to such campaigns. Scientists may be unable to fill out a roster simply because of a lack of public awareness, and participants may stop providing data due to lack of motivation if scientists cannot offer financial compensation or incentives. In this study, we aim to combine participatory sensing with social media, as we believe this is an ideal platform to provide a solution to both of these problems. I have developed the “Trash Pickup” participatory sensing application in which users upload photos of trash they find in their everyday environments alongside GPS location and simple tags with which to sort the data. In addition, the app uploads the photo and creates a “wall post” on behalf of the user to their personal Facebook account and gives them the option to send Facebook ‘app requests’ to their friends, which contain links to group pages and resources pertinent to the topic. Participatory sensing applications can use such tools to motivate the user to participate and also promote awareness and interest in other users. I have designed a user study to fully explore these factors and quantify their impact

on participatory sensing campaigns. We expect to obtain a significantly higher retention and upload rate from our Facebook-posting group over our control group, and we also anticipate a much stronger response from the community and friends of the Facebook group.

#### Modeling Precancerous Polyp Growth Using Differential Equations

**Students: Whitney Taylor** (2013), **Johnakin Martin** (2014), **and Allie VandeWater** (2013)

Faculty Mentors: Zachary Abernathy, Ph.D.; Kristen Abernathy, Ph.D.;

and Joseph Rusinko, Ph.D.

CAS – Department of Mathematics

Colon cancer is the second leading cause of cancer-related death in the United States and, as a result, there has been a significant amount of research done in an attempt to further understand this disease. Mathematical modeling is a tool researchers use to aid in the exploration of the human colon and colon cancer. Previous research developed a linear model that focuses on cellular growth in a single colon crypt. Johnston et al expanded this linear model by adding a term to each equation to account for a maximum rate of differentiation for each cell compartment. We furthered this work by allowing for a larger population of crypts and by introducing an additional equation that tracks the growth of a colonic-polyp. These improvements give us the opportunity to investigate precancerous behavior in the human colon.

#### Investigation of DNA Binding Properties of Ciona Intestinalis FoxO

*Supported by an NIH-INBRE Grant from the National Center for Research Resources and the National Institute for General Medical Sciences*

**Student: Lucas Boncorddo** (2015)

Faculty Mentor: Nicholas Grossoehme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

*Ciona intestinalis* has been identified as a model organism for heart regeneration. The transcriptional regulatory protein FoxO is a major player in controlling global gene expression in this organism. As such, understanding the signaling pathways that influence FoxO-dependent gene regulation may play an important role in understanding the pathways that lead to heart disease and regulation. Not surprisingly, human and *C. intestinalis* FoxO are quite similar in amino acid residues in the region corresponding to the Forkhead DNA Binding Domain, suggesting that these proteins recognize similar sequences of DNA and carry out similar functions. This protein responds to cellular signals in the form of phosphorylation events. To determine the effects of these modifications on the DNA binding affinity between FoxO1 and two sequences of DNA that recognize FoxO1 (DBE and IRE), four mutants were synthesized through standard cloning and purification techniques, two serine to glutamic acid mutants and two serine to phosphoserine mutants. Initial DNA binding affinity experiments between the mutant S282E and DBE/IRE were performed at both pH 6 and pH 8. DNA binding affinity experiments between DBE/IRE and wild type FoxO1 at pH 6 and pH 8 were also performed through fluorescence anisotropy. Overall, the results suggested that DNA binding affinity was higher for both mutant and wild type FoxO1 in a solution containing IRE. Also, as the pH of the DNA-FoxO1 solution became more basic, the DNA binding affinity increased. The DNA binding affinity between DBE/IRE and FoxO1 did not appear to significantly change with the mutants. Future experiments would be necessary to fully characterize the DNA binding interactions of FoxO1.

### Cloning and Purification of Functional Domains of Iron Regulator, RitR, from

#### *Streptococcus pneumonia*

*Supported by SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)*

**Students: Ashley Williams** (2016) **and Zoe Vernon** (2016)

Faculty Mentor: Nicholas Grossoehme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

(CHEM 108H – Owens)

Present concerns regarding metal regulation in bacterial cells include the instrument of iron transport. Research shows that bacteria have evolved to capture necessary iron, while also minimizing any iron overload detected within the cells. This critical role of iron in most organisms makes it an attractive candidate for the medicinal field; deregulation of iron homeostasis in bacteria without affecting our cells would be a very effective tool for killing pathogenic bacteria. The iron regulatory network of *Streptococcus pneumonia*, an important human pathogen, is currently uncharacterized. Recently, it has been found that this organism possesses a mechanism that links iron regulation and global cellular metabolism; to date, this system has yet to be fully characterized. Serine/threonine protein kinase, StkP, is a eukaryote-like enzyme that regulates cellular growth and survival as well as being shown to have direct involvement in the phosphorylation of the RitR (regulator of iron transport) protein, an important participant in the regulation of iron uptake for *Streptococcus pneumonia*. The experiments described will provide insight to the iron binding process involving RitR in this organism. To date, we have managed to successfully separate RitR into both DNA-binding and Response domains through standard molecular cloning techniques. This will allow us to determine whether iron binding in these sites will hinder phosphorylation of RitR. We are currently in the process of conducting a protein purification procedure that will enable us to secure an adequate quantity of protein to establish biochemical and biophysical characterization of these proteins.

### Synthesis of a Sphingosine Kinase Inhibitor I with Zone 3 Modifications

*Supported by an INBRE II Grant*

**Student: Randall Eads** (2013)

Faculty Mentor: Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics and Geology

(CHEM 551/552 – Sumter)

The sphingomyelin pathway is a metabolic pathway, which plays an important role in regulation cell proliferation and apoptosis. Sphingosine kinase inhibitors have been found to inhibit this pathway and prevent cell proliferation. Due to this role, sphingosine kinase inhibitors have been increasingly investigated as a means of cancer treatment. Currently there are a few different sphingosine kinase inhibitors with minimal activity. Sphingosine Kinase Inhibitor I (SKI-I) is the most potent and most selective of the inhibitors; however, it has low bioavailability due to its low solubility in water. In this study, we attempted to synthesize an enhanced sphingosine kinase inhibitor (Compound 3a) that has enhanced bioavailability by introducing more hydrophilic functional groups.

### Synthesis of Sphingosine Kinase 1 Inhibitors by Manipulation of Zone 2

**Student: Jaclyn Hunter** (2013)

Faculty Mentor: Christian Grattan, Ph.D.

CAS – Department of Chemistry, Physics and Geology

Sphingosine Kinase 1 (SK1) is a known enzyme which catalyzes the sphingolipid membrane metabolic pathway toward sphingosine 1-phosphate (S1P) formation. If the cell does not undergo apoptosis when the sphingolipid produces ceramide, sphingosine can form. Once this reaction has taken place, SK1 can catalyze a new reaction to form S1P. Once the cell undergoes this metabolic pathway than the cell will proliferate, causing cancer to spread in the body. To prohibit the SK1 from reacting with sphingosine to produce S1P, novel SK1 inhibitors are needed. Through the use of a template molecule known to inhibit this enzyme in vitro, we have designed a novel derivative in the hope of improving the oral bioavailability while maintaining or improving the interaction with the enzyme. This project involved the incorporation of various heterocycles in place of central pyrazole ring in the SK1 template. Through product purification and analysis, the syntheses performed were shown to be successful and the sought out end products have been obtained. These new compounds are being evaluated in comparison to the template structure to determine if the oral bioavailability and enzyme interaction has been improved.

### Characterization of the DNA Binding Properties of the Nickel Uptake Regulator of *Streptomyces Coelicolor*

*Supported by SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)*

*Winner of the RCSA Award 20160*

**Students: Lauren Rhodes** (2014) **and Jessica Gasparick** (2014)

Faculty Mentor: Nicholas Grossoehme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

NUR is a nickel uptake regulator in *Streptomyces coelicolor*. NUR is responsible for regulating the transcription of certain genes that affect both the uptake of nickel and how it is used within the cell. NUR is thought to function through allosteric activation by nickel ions in what is commonly referred to as 'Nickel' sites in the dimeric structure of the protein. The other metal binding sites, the M-sites, are thought to serve an accessory function. Previous experiments carried out in our lab have quantified the metal binding affinities for Zn<sup>2+</sup> and Ni<sup>2+</sup> for the Ni-site. The primary focus of these experiments was to characterize the relationship between the sodF gene and the protein dimer. This was done by fluorescence anisotropy. NUR was found to bind to DNA both with and without extraneous Nickel present, suggesting that the M-site, not the Ni-site, facilitated the binding of the protein with DNA. This hypothesis was tested by a series of experiments involving metal chelators of differing affinities. Only metal chelators with sufficient strength to remove metal from the M-site were shown to impede binding. These results show that the M-site is primarily involved in the allosteric activation of the NUR, causing it to bind to the sodF gene. Future experiments will involve a buffer of higher salt concentration to determine whether the DNA binding affinities are influenced by the surrounding chemical environment. Preliminary experiments show that higher salt concentrations increase anisotropy readings, indicating that further experimentation is necessary.

### Purification and Characterization of Metal-Free NUR from *Streptomyces coelicolor*

*Supported by SC-INBRE Grant from the National Institutes of Health (NCRR and NIGMS)*

**Student: Denise Peppers** (2015)

Faculty Mentor: Nicholas Grossoehme, Ph.D.

CAS – Department of Chemistry, Physics and Geology

*Streptomyces coelicolor* (Sco) is relevant in today's world, because it is an organism used in research for antibiotic production. In *Streptomyces coelicolor*, metal regulatory proteins are required to maintain homeostasis within the cell. The Nickel Uptake Regulator (NUR) is tasked with maintenance of the level of Nickel (II) within the cell, which plays important roles in protein function and may aid in the antibiotic production. This protein functions by interacting with at least two metal ions and specific sequences of DNA. Understanding how NUR binds nickel is important to understanding the process of metal uptake and may provide critical insight in how this class of proteins functions. To fully characterize this protein, the metal binding properties and the DNA binding properties of NUR must be investigated. The work carried out this year has focused on identifying a new protein purification strategy that effectively removes all metal ions from this protein during the purification process. This is important to ascertain which metal binding site plays the most critical role in protein function. Our hypothesis is that other metal binding sites are important for fine-tuning of metal affinity and DNA sequence specificity.

### Cancer Activism Updated

**Student: Travis Whisenant** (2013)

Faculty Mentors: Karen M. Kedrowski, Ph.D. and Marilyn S. Sarow, Ph.D.

CAS – Department of Political Science

(PLSC 501 – Kderowski)

In many respects, prostate cancer is for men what breast cancer is for women—in terms of incidence, survivability, mortality, and the impact on body image. Yet breast cancer occupies a far more prominent position in the media, in the public's mind, and on the policy agenda. The purpose of this research is to update the principal findings of Cancer Activism (Kedrowski and Sarow, 2007) to include media coverage and policy attention to these diseases since 2000. This analysis includes a discussion of social media, especially in its role to pressure the Komen for the Cure Foundation to reinstate its funding to Planned Parenthood and the impact of the Affordable Care and Patient Protection Act on coverage of prostate cancer and breast cancer screening tests. The results of this research will be published in a book chapter on health politics.

### Political Subjectivity in the work of Hobbes, Locke, and Edwards

**Student: Emily Longshore** (2013)

Faculty Mentors: Michael Lipscomb, Ph.D. and Scott Huffman, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Lipscomb and Huffman)

This essay seeks to retrieve the political theoretical import of Jonathan Edwards' philosophical world view as a corrective to the overemphasis, within portrayals of the American political imagination, on the Lockean stress on the autonomous individual.

### The Arab Spring, Occupy, and Revolutionary Theory

**Student: Judson Abraham** (2013)

Faculty Mentors: Michael Lipscomb, Ph.D. and Scott Huffman, Ph.D.

CAS – Department of Political Science

This paper explores the innovative revolutionary theories enacted in the Arab spring and its Occupy counterparts, paying particular attention to how the emergent praxis of these encounters differs from previous insurgent efforts.

### Social Media, Religion, and Political Participation in College Students

**Student: Summersby Okey** (2013)

Faculty Mentors: Scott Huffman, Ph.D. and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Huffman and Lipscomb)

The survey examines the social media use and religiosity of college students in order to analyze their effects on political participation. The data was collected through an anonymous online survey that asked questions regarding the political participation, religious ideology, and social media use of young adults. The central research question centers on whether there is a relationship between one's religiosity and social media use and their level of political participation. The respondent's political participation, religiosity, and their social media use will be measured by a series of questions, which when analyzed will determine how much or how little they are involved in each sphere. The significance of these variables will be tested using a folded scale of ideology for each separate variable. It is hypothesized that there is strong positive correlation between being a protestant evangelical Christian and being involved in the political sphere. It is also hypothesized that religion will play a role in party identification, but only for white Americans. Based upon examination of previous studies regarding Internet use and political participation, it is hypothesized that those who use the Internet and social media more regularly will be more likely to be politically involved than those who do not. The study of the relationship between social media use and political participation will be able to examine whether those who are politically active on the Internet are also politically involved in other aspects of their lives. It is further hypothesized that those who regularly use Facebook as their main form of social media are more likely to be politically involved than those who do not.

### New Activist, New Activism: Rethinking Social Movements in the Age of Digital Activism

**Student: Porsche Hill** (2012)

Faculty Mentors: Jennifer Leigh Disney, Ph.D. and Adolphus Belk Jr., Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney and Belk)

The study of social movements is a relatively new area of interest that was not popularized until the 1950s, when sociologists were seeking to explain mass participation in fascist movements. The dominant school of thought at the time, collective action, is primarily concerned with how people become engaged in social movements. Terms such as hysteria, irrational, hypnotic, and contagion were commonly used to explain mass participation. In the decades since, dominant paradigms in the study of social movements include political process theory and new social movement theory. These theories, and others, move away from the notion that participants are irrational and seek to explore the political opportunities and cultural

phenomenon that give rise to social movements. The 21st century has seen the rise of several captivating popular movements including the Global Justice Movement and the global Occupy Movement. These movements are markedly different than previous social movements in that they heavily rely upon various digital technologies to mobilize participants and disperse information. These movements also utilize new technologies as tools for direct action and have been successful in disrupting the flow of business as usual for many corporations and government agencies. The question for theorists of social movements now is, whether such developments fundamentally challenge existing theories on social movements.

While the issue of digital activism is a relatively new one, the lack of scholarly analysis of said phenomenon is astonishing. Sociologists and technology theorists seem to operate with no regard for the other field's work, and political scientists are virtually mum on the topic. What follows will be an examination of the origins and development of digital activism through the lens of the GJM and Occupy. By analyzing the use and implications of emerging technologies within these social movements, I will demonstrate that existing theories of social movements do not adequately account for new phenomenon. Pervasive notions on collective identity, the life cycle of social movements, leadership, structure and agency are being challenged by recent social movements. Although my central claim is that digital activism requires us to rethink existing theories on social movements, it is also necessary to note that technology can both challenge and reproduce existing social hierarchies.

#### A “Kuumbaian” Inspired Gender Analysis of the Rock Hill, South Carolina “Jail, No Bail” Civil Rights Campaign

**Student:** Tonisha Rhinehart (2012)

Faculty Mentors: Jennifer Leigh Disney, Ph.D. and Adolphus Belk Jr., Ph.D.

CAS – Department of Political Science

(PLSC 490 – Disney and Belk)

Despite the vast research by scholars on leaderships roles performed during the Civil Rights movement, little is known about the perspectives, contributions, and specific actions of average everyday black women during this particular era. The majority of the research presented regarding the movement has been heavily focused on male contributions, specifically, elite males such as Martin King Jr., Jesse Jackson, and Thurgood Marshall. In addition, scholarly research has paid great attention to elite black female leaders such as Rosa Parks, Dorothy Height, and Diane Nash, but has neglected to focus on the contributions of everyday black female participants. This paper is a gendered analysis that focus especially on the “Jail, No Bail” campaign in Rock Hill, South Carolina—and how the male members, the “Friendship Nine,” received greater recognition for their leadership contributions, while the female members, the “City Girls,” have received less recognition due to their race and gender, even though they drew significant attention to the campaign, helping to lead it to success. The methodological approaches presented in this paper consist of a qualitative open-ended interview with a member of the “City Girls” as well as an analysis that consists of a framework of sources by scholars such as Bahiti Kuumba, Kimberle Crenshaw, and Bernice Barnett.

#### Crystallization of *Clostridium acetobutylicum* CaQ97 Xylanase

**Student:** Mariam Salib (2014)

Faculty Mentor: Jason C. Hurlbert, Ph.D.

CAS – Department of Chemistry, Geology, and Physics

The GH30 xylanase produced by *Clostridium acetobutylicum* can be used to explore a new prospect of biofuel production, which will minimize today's society's dependence on fossil fuels. That is due to its ability to hydrolyze xylan chains at the β-1, 4 positions. A few years ago, the world experienced a dramatic rise in food prices due to the production of ethanol using corn plants. In order to solve this problem, the husk should be used instead of the plant itself, which means, hemicellulose should be used in ethanol production increasingly. In order to make progress towards obtaining a crystallographic structure of the enzyme, our lab has previously cloned and developed a multistep purification protocol for recombinant CaQ97 xylanase. Initial sparse-matrix crystallization screening identified an initial condition that yielded clusters of needle-like crystals (0.5M (NH4)2SO4, 0.1M Sodium citrate tribasic dihydrate and 1.0M Li2SO4, pH 5.6). These crystals were too small to be of use in x-ray diffraction experiments. My goal is to optimize this initial condition to obtain diffraction quality crystals of the enzyme. Initial attempts at optimization have focused on employing seeding techniques. In crystal seeding, previously grown crystals are physically crushed and used as seed for crystal growth in a new equilibration experiment. Using such strategies, we have seen a dramatic increase in crystal size and a change in crystal morphology from needle clusters to single hexagonal crystals. Future work will utilize the larger single crystals as seeds in order to further increase crystal size.

#### Occupational Prestige and Political Engagement of Hispanic Immigrants in the US

*Presented at the Southern Sociological Society, April 2013*

**Student:** Karla Brown (2013)

Faculty Mentor: Jean Haubert, Ph.D.

CAS – Department of Sociology and Anthropology

(SOCL 516 – Haubert)

The United States is considered to be the land of equal opportunity, and because of this people migrate from all over the world searching for a better life for themselves and their families. However, there are significant disparities in equalities between immigrants of different ethnicities as is indicated by the 2004 General Social Survey data. The purpose of this research paper is to compare and contrast the occupational status and political participation of Hispanic immigrants with the average American as well as with other immigrants. Segmented assimilation theory and group conflict theory provide the primary theoretical underpinnings for this study. This paper connects to literature on the subjects of horizontal occupational mobility of Hispanic immigrants and their attitudes towards politics/government. Recent studies reveal conflicting findings on the political participation of Hispanic immigrants, and this paper attempts to fill in this gap. Also, several studies have considered regional impacts and this study attempts to broaden the knowledge of any regional differences that may affect Hispanic immigrants' occupational opportunities and political involvement. The most important findings indicate that Hispanic immigrants hold significantly less prestigious occupational positions than non-Hispanic immigrants and the average American, and they feel more strongly that voting is important compared to native-born Hispanics.

## OFFICE OF NATIONALLY COMPETITIVE AWARDS (ONCA)

Winthrop University's Office of Nationally Competitive Awards (ONCA) identifies and assists highly motivated and talented students to apply for nationally and internationally competitive awards, scholarships, fellowships, and unique opportunities both at home and abroad. ONCA gathers and disseminates award information and deadlines across the campus community, and serves as a resource for students, faculty, and staff throughout the nationally competitive award nomination and application process.

The ONCA Award Recognition Ceremony is an annual event recognizing the difficult and rewarding challenge taken on by Winthrop University students to apply for some of the most prestigious scholarships in the nation and the world. Win or lose, the *process* of personal reflection required to complete a nationally competitive award is often transformative in a student's life, and can be as important as the outcome. ONCA's Sixth Annual Award Recognition Ceremony (2012-2013) celebrates nationally competitive award applications for scholarships including the Rhodes Scholarship, the National Security Education Program Boren Fellowship, Mitchell Scholarship, and the Benjamin A. Gilman International Scholarship to study abroad.

This year, we'd also like to take the time to recognize and honor Jennifer Leigh Disney, the first director of the Office of Nationally Competitive Awards. When this office was founded under the leadership of President DiGiorgio, then Dean Brien Lewis, and Disney in 2006, the office had perhaps one or two applicants for nationally competitive awards each year. By 2010, Disney had grown the program to 13 applications annually. In the 2011-2012 year, ONCA boasted 34 applications for nationally competitive awards, achieving the first Rhodes Scholar Finalist in Winthrop University's 125-year history, a Fulbright Finalist, and several Benjamin A. Gilman International Scholarships for Pell grant recipients to study abroad. Dr. Disney's unflagging enthusiasm and willingness to help students achieve their dreams have truly impacted the campus culture and changed the lives of our students by helping them identify, recognize, and achieve the goals and aspirations of which they are capable.

In addition to recognizing the work of Dr. Disney and each of our ONCA Scholars, I would like to thank each and every member of the Winthrop University community who has given a student an encouraging word, recommended a student for ONCA through the online midterm reporting system established by Dean Gloria Jones, written a letter of recommendation, brought an ONCA presentation into the classroom, participated in an award selection or mock interview committee, or served on the ONCA Advisory Board. We are truly making a difference in the lives of our students.

#### Leslie Bickford, Ph.D.

Assistant Professor of English

Director, Office of Nationally Competitive Awards (ONCA)

Winthrop University

April 2013

OFFICE OF NATIONALLY COMPETITIVE AWARDS (ONCA)  
SIXTH ANNUAL AWARD RECOGNITION CEREMONY 2012-2013  
SATURDAY, APRIL 20, 2013 10:30 a.m.-11 a.m.

#### ONCA AWARD NOMINEES AND WINNERS 2012-2013

**Benjamin A. Gilman International Scholarship Program:** The Gilman scholarship awards 2,300 scholarships of up to \$5,000 per academic year for U.S. citizen undergraduate students of limited financial means to pursue academic studies abroad. Such international study is intended to better prepare U.S. students to assume significant roles in an increasingly global economy and interdependent world.

- Winthrop University Winner: *Anna Ponds*

- Winthrop University Winner: *Veronica Gonzalez*

- Winthrop University Nominee (Pending): *Eboni Frazier*

- Winthrop University Nominee (Pending): *Hilary Gay*

- Winthrop University Nominee (Pending): *Montana Housand*

- Winthrop University Nominee (Pending): *Allison Keller*

- Winthrop University Nominee (Pending): *Trey Stokes*

**The CBCF Congressional Internship Program:** This intensive nine-week program offers the opportunity for college students from across the nation to learn about the legislative process, leadership and careers in the policy making process. Interns work in CBC member offices, attend professional development events, and participate in leadership development projects. The program prepares young people to become informed decision makers and influential leaders who shape our world.

- Winthrop University Nominee (Pending): *Shakora Bamberg*

**Jack Kent Cooke Foundation Graduate Arts Award:** The Jack Kent Cooke (JKC) Graduate Arts Award recognizes and rewards America's promising up-and-coming artists from lower-income backgrounds with the nation's leading graduate scholarships in the visual arts, performing arts, and creative writing. The JKC Foundation identifies exceptional individuals who not only have exceptional artistic or creative promise, but also demonstrate academic achievement and the will to succeed in their chosen fields.

- Winthrop University Nominee: *Joe Giordano*

**Mitchell Scholarship:** The George J. Mitchell Scholarship provides tuition and room for study at one of several institutions of Ireland and Northern Ireland. An \$11,000 stipend to cover additional expenses and a travel stipend are also provided.

- Winthrop University Nominee: *Patrick Bryant*

**NSEP Boren Fellowship:** The National Security Education Program (NSEP) provides a unique funding opportunity for U.S. students to study world regions critical to U.S. interests (including Africa, Asia, Central & Eastern Europe, Eurasia, Latin America & the Caribbean, and the Middle East). NSEP provides scholarships to U.S. undergraduate and graduate students for study abroad in world areas critical to U.S. National Security. Recipients incur an obligation to work either for an office or agency of the Federal Government involved in national security affairs or in higher education.

- Winthrop University Nominee (Pending): *Curtis Boyd*

**Pi Gamma Mu Scholarship:** The mission of Pi Gamma Mu National Honor Society in Social Services is to encourage and promote excellence in the social sciences and to uphold the ideals of scholarship and service. Pi Gamma Mu’s scholarships are intended for the first or second year of graduate work in the areas of sociology, anthropology, political science, history, economics, international relations, public administration, criminal justice, law, social work, psychology, and human/cultural geography.

- Winthrop University Nominee (Pending): *Samantha Smigel*

**Rhodes Scholarship:** The Rhodes Scholarship is one of the most competitive and prestigious awards available to students in the world. It includes all fees, travel expenses, and a yearly stipend for two years of study at Oxford University in the United Kingdom, with a possible renewal for a third year. Thirty-two Rhodes Scholars are awarded annually—winners must undergo interviews at the state and regional level.

- Winthrop University Nominee: *Daniel Strokis*

**The Sunbelt Rentals Scholarship:** The Sunbelt Rentals Scholarship is a means of recognizing the work done in the classroom, campus, and the community by students within the Big South Undergraduate Research Conference. Two scholarships are awarded in January at a value between \$2,000 and \$4,000 each. A committee made up of Big South Undergraduate Research Conference administrators, Sunbelt Rental executives, and institutional representatives from the Big South Undergraduate Research Conference institutions are responsible for determining the award.

- Winthrop University Nominee: *Shantelle Igozee*

## WINTHROP UNIVERSITY RECOGNIZES ONCA STUDENT SUCCESS STORIES

**Shakora Bamberg** is a sophomore at Winthrop University and a mass communication major with a theatre minor. She is currently active in small capacities on campus such as SOAR, Serving Others and Reflecting; Relay for Life; is a staff-writer for the Johnsonian and the Roddey McMillan Record; a WUNABJ (Winthrop University National Association of Black Journalists) club member; a member of Winthrop Wesley church foundation and most recently a student leader at this year’s MLK Day of Service. As she continues her education here at Winthrop, she plans to get more involved with different clubs and organizations. Shakora has recently applied for the Congressional Black Caucus Foundation Congressional Internship Program.

**Curtis Boyd** is currently pursuing a master’s in teacher education. He has applied for the National Security Education Program Boren Fellowship, which he hopes to use to fund a semester abroad in Kenya next semester. Curtis would like to bring his passion for music together with his interest in Kenyatta culture and specifically the Swahili language; he wants to begin a program upon his return to the U.S. to help teach children and adults alike to speak Swahili using a variety of cultural and musical techniques.

**Patrick Bryant** graduated from Winthrop University with a Bachelor of Arts in English-Writing (with a concentration in creative writing) and a 3.85 GPA in May 2012. As an undergraduate, he won the M. L. Fagan McCloy Scholarship, the Thomas J. Watson Memorial Scholarship, and several other awards for academic excellence. Patrick was the first place winner of *Yemassee Journal’s* 2010 Pocatigo Poetry Contest for his poem “Clarity,” which was published in the journal with commentary in spring 2010. He was also on the Short List for the Faulkner-Wisdom Creative Writing Competition, in both the “Essay” and the “Poetry” categories, and he had his poem, “Transmission,” published in the South Carolina Poetry Initiative’s 2009 Web Anthology. Patrick also won the 2013 Sigma Tau Delta Individual Website Award for his online collection of poems, entitled “through a bearded darkly.” Patrick is currently pursuing a Master of Arts in English Literature with a 3.89 GPA. In addition to his critical literary studies, Patrick writes creatively and is currently working on a short novel. After completing the M.A., Patrick plans to teach English abroad in South Korea while continuing to write fiction and poetry. Patrick was endorsed by Winthrop University for the 2013 George Mitchell Scholarship to study Irish literature in Ireland.

**Eboni Frazier** is a junior social work major with a minor in business administration. She has applied for the Benjamin A. Gilman International Scholarship to assist with her dream of studying abroad in Seville, Spain. If granted the award, she hopes to travel to Spain and become proficient in the Spanish language. Eboni is a member of Alpha Kappa Psi Professional Fraternity and a division leader for a community service organization on campus called S.O.A.R. After graduation she plans on receiving her Master of Social Work and working with veterans in Veterans Affairs.

**Hilary Gay** is a junior environmental studies major with a minor in business administration and a LIFE Scholarship recipient. She has applied for the Benjamin A. Gilman International Scholarship to assist in her plans to study in Queensland, Australia at the University of the Sunshine Coast for the fall 2013 semester. After graduation she plans on attending graduate school and eventually working in ecotourism.

**Joseph Giordano** is a senior English major with a minor in creative writing. He applied for the Jack Kent Cooke Foundation Graduate Arts Award. Had he received it, he would have hoped to use it to attend a Master of Fine Arts program. Joseph served as the prose editor of Winthrop’s literary magazine, *The Anthology*, in 2012. He’s been very active presenting papers and reading his fiction at regional conferences, such as the Winthrop Department of English’s Eighth Annual Research Conference last month, the Big South Undergraduate Research Symposium at High Point University earlier this month, and the Southeastern Writing Center Association Conference in February of 2012. Joseph’s current GPA is 3.898, though he’s hoping to get it to 3.9 by his graduation in May.

**Veronica Gonzalez** will complete her Bachelor of Fine Arts in commercial photography from Winthrop University upon her return from her semester abroad in New Zealand, for which she was awarded a Benjamin A. Gilman International Scholarship to study abroad during spring 2013. As an undergraduate, she spent her time absorbing as much knowledge as the semester would allow while balancing extracurricular activities. Veronica was the art editor of *The Anthology*, the campus’ creative arts magazine, as well as an active participant in the Guild of Emerging Metalsmiths, helping to help cultivate and unite the Winthrop University arts community. She is currently completing her B.F.A. at Otago Polytechnic, New Zealand in the hopes of broadening her horizons in the field of art with the potential to open up new career opportunities. She will complete her B.F.A. and return to the United States to receive her diploma.

**Montana Housand** is a junior biology major with a minor in chemistry and a 3.85 GPA. She has applied for the Benjamin A. Gilman Scholarship to study abroad at the University of the Sunshine Coast in Australia during the fall of 2013. There, she hopes to study health concerns on an international level and how they differ from those in the United States. Montana has held the following positions in Alpha Delta Pi sorority: scholarship chair, recording secretary, and property manager. After college, she hopes to pursue a career in the medical field.

**Shantelle Igozee** is a senior exercise science major in the Department of Physical Education, Sport, and Human Performance at Winthrop. She is a part of the Ronald E. McNair Post Baccalaureate Research Program, serves in the military, and is a member of Sigma Gamma Rho Sorority, Inc. Shantelle was awarded the Hellams Award 2012 for Most Outstanding Exercise Science Student, has been on the Dean’s List three semesters, and received a scholarship to attend the Healthy People 2020 Conference and Graduate School Expo at Pennsylvania State University. She conducted two summers worth of research on “Food Deserts: The Effects of Location of Food Retailers and Role of Food Deserts in Rock Hill, S.C.” and “Food Deserts: Environmental Assessment of Food Retailers in Rock Hill, S.C.” Shantelle applied for the Sunbelt Rentals Scholarship to assist her in paying for her last semester at Winthrop University before graduating and was a finalist for this award.

**Allison Keller** is a theatre major with a concentration in performance and a minor in psychology. She is a first generation college student and is a member of the National Society of Collegiate Scholars, Alpha Lambda Delta, and Alpha Psi Omega. She plans to study abroad in England at Edge Hill University for her entire junior year. She has applied for the Benjamin A. Gilman International Scholarship to help fund this year abroad. Her hope is that while in England she can learn styles of acting that are not offered in the United States. With those styles under her belt she will then come back to the U.S. and try to increase respect for and acceptance of these styles in the acting world here.

**Evan Marie O’Neal** is a junior English major concentrating on literature and language and minoring in creative writing with a current GPA of 3.5. She has presented creative writing and an academic paper on Sherlock Holmes at the Winthrop University English Conference and plans on presenting papers at both Big SURS and Potterwatch later in the spring semester. Evan has also applied for the Benjamin A. Gilman Scholarship and The Geraldine Trammell Hurley Fellowships for Study and Travel in hopes of funding a planned trip to study abroad in Ormskirk, England during the fall semester of 2013. After she has received her bachelor’s degree, she hopes to continue on to grad school to study Victorian literature.

**Anna Ponds** is a junior family and consumer sciences major, with a concentration in youth issues and a minor in Spanish. She comes from a family of ten children, two of which have graduated from Winthrop University previously. She currently has a 3.89 GPA and will be graduating in May 2014. She is a two-year leader on the Ministry Team of the Reformed University Fellowship campus ministry at Winthrop. In addition, she is a lifetime member of the Alpha Lambda Delta Honors Society and the National Society of Collegiate Scholars. This year, she applied for and was awarded the Benjamin A. Gilman International Scholarship for a spring 2013 semester abroad in Sevilla, Spain. She is currently studying in Sevilla to not only complete most of her Spanish minor but also to learn to speak the Spanish language within the context of the culture and people there. After she graduates from Winthrop, she plans to pursue a master’s certification in counseling from a theological seminary so she can work as a certified counselor with adolescent females in a Spanish-speaking country.

**Samantha Smigel** is a senior elementary education major in the Honors Program. Through perseverance over the past four years she has applied and been awarded over \$48,000 in academic scholarships, and been on the President’s List for five semesters. She is a member of five international honors societies: Pi Lambda Theta, Omicron Delta Kappa, Kappa Delta Pi, and Order of Omega. During the summer of 2012 her Senior Honors Thesis titled, *Cutting Cursive; Is Handwriting Still Important to Today’s Preservice Teacher?*, received the Martha S. Marsh, Virginia Horns-Marsh and Frank E. Marsh Writing/Research Scholarship through Kappa Delta Pi Educational Foundation. In her time at Winthrop she has been president of the Palmetto State Teacher’s Association, president of the Winthrop Delta Delta Chapter of Kappa Delta Pi, and a member of Delta Zeta Sorority. She is proud to have presented with Winthrop faculty and peers at the South Carolina Council of Teachers of Mathematics conference in the fall of 2012, the Southern Regional Honors Council Conference in spring of 2013, and the National Future Educator’s Association National Conference in the spring of 2013. After graduation in May, Samantha plans to pursue a master’s degree in literacy and Language. She has applied for a Pi Gamma Mu scholarship to aid with funding for graduate school.

**Trey Stokes** is a sophomore political science and modern languages double major. He is the president and founder of Winthrop’s College Libertarians and the vice-president of the Winthrop Organization of Freethinkers. He has applied for the Benjamin A. Gilman International Scholarship. With it, he hopes to travel to Costa Rica in the fall in order to gain valuable cultural and linguistic experiences.

In spring 2013, **Daniel Strokis** will become the first graduate with a Bachelor of Music Performance in composition degree from Winthrop University. He is studying music composition under Ronald K. Parks and L. Mark Lewis, and has studied classical guitar under L.H. Dickert. Daniel has won two music composition awards, which were honored with public performances. In 2011, he won the Tennessee Valley Music Festival Young Composers Forum Composition Contest, and was one of five winners selected to have his composition performed by the Huntsville Youth Orchestra. In 2010, he won the Charlotte Civic Orchestra Student Composition Contest and was selected as the sole winner to have his composition performed by the Charlotte Civic Orchestra. He has attended masterclasses by Kati Agocs, Alan Mearns, Samuel Adler, Robert J. Bradshaw, and Raphael Rodriguez. Daniel Strokis was Winthrop University’s endorsed nominee for the Rhodes Scholarship in fall 2012.



# McNair Scholars

The Winthrop McNair Scholars Program is funded through a U.S. Department of Education TRiO grant (PR/Award No.: P217A090009) and matching funds from Winthrop University. The program serves 30 undergraduates from Winthrop and other S.C. universities who meet first generation and income criteria or who come from groups underrepresented in higher education.

Each year, the twelve-member Winthrop McNair Advisory Board selects Scholars through a highly competitive application and interview process. All McNair Scholars complete an intensive undergraduate research experience and several of Winthrop's Scholars have earned awards for their research. McNair Scholars also receive academic support and financial assistance to successfully enroll in and complete doctoral programs.

Being a McNair Scholar is a prestigious, nationally recognized honor resulting in Scholars being actively recruited by graduate programs across the country. For more information, visit [www.winthrop.edu/mcnair](http://www.winthrop.edu/mcnair) or contact Cheryl Fortner-Wood, director (fortnerc@winthrop.edu or 803/323-2125).

## Cheryl Fortner-Wood, Ph.D.

Director, McNair Scholars Program  
Associate Professor of Psychology

## Scholar (Mentor) Research Presented at 2012 Winthrop McNair Scholars Symposium

Brianna Barnette (Lisa Harris, Ph.D.)

*The Necessity of Dialect Shifting in Academic Success*

Brittney Black (Merry Sleight, Ph.D.)

*Parentification and Parenting Beliefs*

Chauntice Buck (Donna Nelson, Ph.D.)

*Predictors of Effort Expenditure Following a Mental Fatigue Challenge*

Vitta Clawson (Merry Sleight, Ph.D.)

*Parenting Regret*

Zachary Collier (Brad Witzel, Ph.D.)

*Response to Intervention*

Dwana David (Matt Hayes, Ph.D.)

*The Similar Benefits of Facebook and the Therapeutic Journaling (Facebook: A New Diary?)*

Nicole Drown (Jack DeRochi, Ph.D.)

*Farewell All Honor: Destructive Idealism in Otway's The Orphan*

Aaron Fountain (Andy Doyle, Ph.D.)

*The Right to Sit: Symbolic Expression and the Pledge of Allegiance in New York and New Jersey Public Schools, 1969-1978*

John Huffman (Michael Lipscomb, Ph.D.)

*Developing An Open Model Discourse Ethic Utilizing Jurgen Habermas' Ideal Speech Situation*

Shantelle Igiozee (Janet Wojcik, Ph.D.)

*Food Deserts: Environmental Assesment of Food Retailers in Rock Hill, S.C.*

Kierra James (Antigo Martin-Delaney)

*Students with Learning Disabilites' Perceptions: Utility and Use of University Accommodations*

Chelsea Johnson (Marguerite Doman, Ph.D.)

*Identifying and Exploring Variables of Undergraduate Computer Science Programs that Promote Matriculation to Graduate Programs*

Destinee Johnson (Nick Grossoehme, Ph.D.)

*Examining the Colormetric and Calormetric Properties of Various Copper (I) Complexes*

Brittany Lawrence (Donna Nelson, Ph.D.)

*An Exploration of Variables that Predict Attitudes about Interracial Romance*

Amy Moore (Nick Grossoehme, Ph.D.)

*Investigation and Development of Strategies to Effectively Teach Introductory Chemistry through an Online Platform*

Jasmine Morgan (Ameda Soehme, Ph.D.)

*Internet Usage in the Workplace*

Jose Paramo (Stephen Smith, Ph.D.)

*The Causes and Consequences of a U.S. Platoon's Refusing Orders: A Case Study from the Iraq War*

Brittany Prioleau (Heather Evans-Anderson, Ph.D.)

*Validation of Altered Gene Expression in the Heart of Ciona Intestinalis*

Derion Reid (Takita Sumter, Ph.D.)

*Observing Arg25 Role in High Mobility Group A1 Proteins*

Hannah Swan (Joe Rusinko, Ph.D.)

*Agent-Based Modeling of Fabric Drape Simulation Using Differential Equations*

Macreshia Salters (Shebby Neely-Goodwin, Ph.D.)

*Over the River and Through the Woods: An Assessment on the Perspective of Grandparenting and Gerontology*

Shanique Sumter (Laura Ullrich, Ph.D.)

*Evaluating the Economic Effects and Approaches to the IFRS Convergence in the U.S.*

Brittany Walker (Jay Hanna, Ph.D.)

*Synthesis of Benzisoxazoloazinium Tetrafluoroborates as Potential DNA Intercalators*

## WISE Scholars

The Winthrop Initiative for STEM Educators (WISE) program is supported by a \$1.2 million grant through the National Science Foundation Robert Noyce Scholarship Program. The primary focus of the WISE efforts is to recruit, support, and mentor science and mathematics majors choosing to pursue teaching as a career. The program currently has two primary outreach activities. The WISE Scholars are graduate and undergraduate students committed to teaching in high need schools and are provided scholarship funds, connections to state and national organizations for STEM teachers, opportunities for conference participation, additional mentoring, and access to STEM education resources on campus. The WISE Interns are first and second year Winthrop and York Technical School students pursuing STEM degrees. These students participate in a summer program that explores research in a disciplinary group, engages in local schools for service learning, and promotes the formulation of individual research questions for more extensive investigation through a variety of other avenues.

The following WISE Interns and Scholars submitted abstracts for their scholarly work:

Lucas Bondcorddo	2012 WISE Intern
Destinee Johnson	2011 WISE Intern
Amy Moore	2011 WISE Intern and Current WISE Scholar
Denise Peppers	2012 WISE Intern
Kirsten Stallings	2011 WISE Intern
Whitney Taylor	2011 WISE Intern and Current WISE Scholar

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