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# Undergraduate Scholarship in the College of Arts and Sciences 2008 Book of Abstracts

Winthrop University

The College of Arts and Sciences, Winthrop University

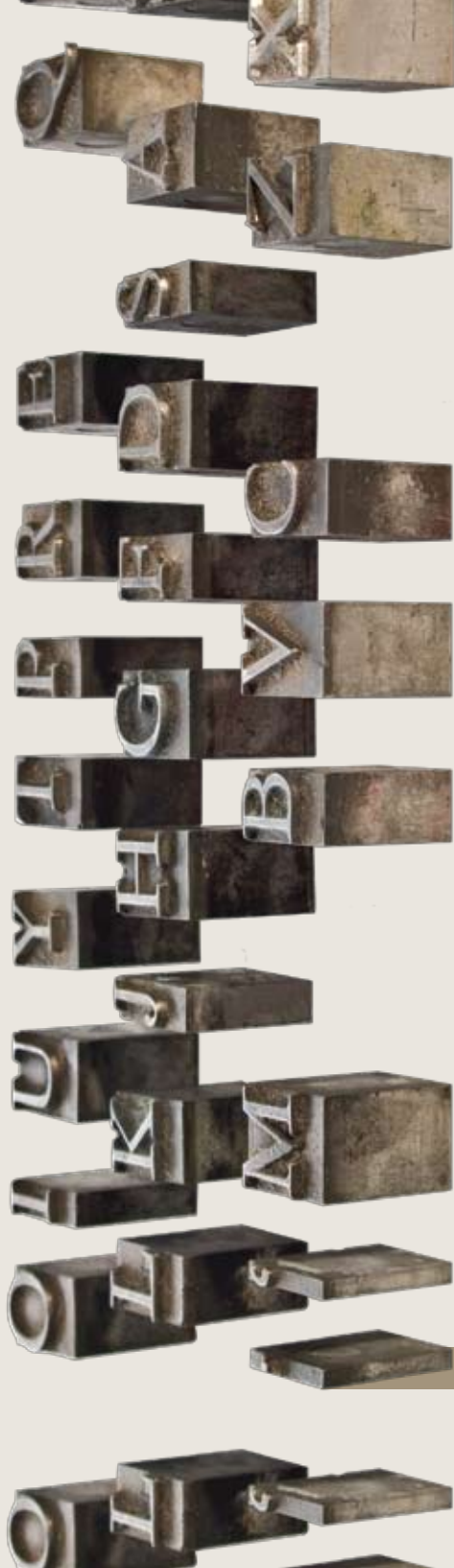
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# UNDERGRADUATE SCHOLARSHIP

in the College of Arts and Sciences

Book of Abstracts 2008

Winthrop University



## Introduction



“SCHOLARSHIP IS TO BE CREATED NOT BY COMPULSION, BUT BY  
AWAKENING A PURE INTEREST IN KNOWLEDGE.”

— RALPH WALDO EMERSON

The College of Arts and Sciences proudly presents Undergraduate Scholarship in the College of Arts and Sciences, our sixth Book of Abstracts that features the scholarship conducted in the college by our students in collaboration with faculty mentors. In the above quote, Ralph Waldo Emerson goes on to say the following: “The wise instructor accomplishes this by opening to his pupils precisely the attractions the study has for himself.” Indeed, the high level of scholarship reflected in this book is a testament to the students’ development as scholars and the effective mentorship provided by the Winthrop faculty as they share in the practice of their disciplines.

We congratulate all the students and their mentors for the quality of their work and their willingness to share it with the greater academic community through publication in refereed journals and presentations at regional, national, and international meetings. We also thank William Folden for editing the abstract book and two Visual Communication Design majors—Joshua Isham Hallums (2009) and Kimberly H. Diedrich (2009)—for the cover design and production of the book.

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

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

April 2008



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# Winthrop University Undergraduate Research Initiative



## COLLEGE OF ARTS AND SCIENCES

The Winthrop University Undergraduate Research Initiative (WUURI) in the College of Arts and Sciences 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.

## DIRECTOR OF UNDERGRADUATE RESEARCH:

Dwight Dimaculangan, ph.d.

## UNDERGRADUATE RESEARCH ADVISORY COMMITTEE:

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Merry Sleigh, Ph.D. – *Psychology*

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

Kristi Westover, Ph.D. – *Biology*



## ORIGIN OF THE 1918 SPANISH INFLUENZA VIRUS: A COMPARATIVE GENOMIC ANALYSIS

*Vana, G. and Westover, K. M.*

*Published in Molecular Phylogenetics and Evolution, February 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a Winthrop University Research Council Grant*

### **Geoff Vana, 2007**

*Department of Biology*

*Faculty Mentor:*

*Kristi M. Westover, Ph.D.*

To test the avian-origin hypothesis of the 1918 Spanish influenza virus we surveyed influenza sequences from a broad taxonomic distribution and collected 65 full-length genomes representing avian, human and “classic” swine H1N1 lineages in addition to numerous other swine (H1N2, H3N1, and H3N2), human (H2N2, H3N2, and H5N1), and avian (H1N1, H4N6, H5N1, H6N1, H6N6, H6N8, H7N3, H8N4, H9N2, and H13N2) subtypes. Amino acids from all eight segments were concatenated, aligned, and used for phylogenetic analyses. In addition, the genes of the polymerase complex (PB1, PB2, and PA) were analyzed individually. All of our results showed the Brevig-Mission/1918 strain in a position basal to the rest of the clade containing human H1N1s and were consistent with a reassortment hypothesis for the origin of the 1918 virus. Our genome phylogeny further indicates a sister relationship with the “classic” swine H1N1 lineage. The individual PB1, PB2, and PA phylogenies were consistent with reassortment/recombination hypotheses for these genes. These results demonstrate the importance of using a complete-genome approach for addressing the avian-origin hypothesis and predicting the emergence of new pandemic influenza strains.

# BODY IMAGE AND EATING BEHAVIORS OF AFRICAN-AMERICAN AND CAUCASIAN WOMEN

*Summer, T., Morrison, A., & Sleigh, M. J.*

*Published in Psi Chi Journal of Undergraduate Research, Fall 2007*

**Trista Summer Baird, 2005**  
**April Morrison Zorn, 2005**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleigh, Ph.D.*

Body image is a factor that is influential in young women's eating behavior. This study examined body image and its relationship to eating behaviors among African-American and Caucasian young adult women. We found that body esteem is related to both race and eating patterns. African-American women rated their body esteem about their sexual attractiveness, body esteem about their weight, and body esteem about their physical condition higher than Caucasian women. African-American women also had a higher ideal weight than Caucasian women. Caucasian women reported healthier eating habits than African-American women. Women who rated themselves as having very unhealthy eating habits had a higher ideal weight, lower body esteem about their weight, and lower body esteem about their physical condition than women in the other eating-habit categories.

# PREPARATION OF SILYL ENOL ETHERS FROM ACYLOIN DERIVATIVES USING SILYLLITHIUM REAGENTS

*Robertson, B. D. & Hartel, A. M.*

*Published in Tetrahedron Letters Volume 49, 2008*

*Presented at the 235th National Meeting of the American Chemical Society, New Orleans, La., April 2008*

*Supported by a Winthrop University Research Council Grant*

**Bradley D. Robertson, 2008**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*Aaron M. Hartel, Ph.D.*

Silyl enol ethers are important synthetic intermediates, and are particularly useful in carbon-carbon bond forming reactions such as the Mukaiyama aldol reaction. We have developed a new method for the regio- and stereoselective preparation of silyl enol ethers from acyloin derivatives using silyllithium reagents. The reaction involves nucleophilic addition of the silyllithium reagent to the carbonyl and subsequent carbon-to-oxygen migration of the silyl group (1,2-Brook rearrangement). This normally disfavored rearrangement is driven by the concomitant expulsion of the adjacent leaving group. The reaction conditions were optimized using 1,2-diphenyl-2-(trimethylsiloxy)ethanone (1)

as the substrate. A series of reactions with 1 utilizing a variety of solvents (THF, diethyl ether and toluene), silyllithium reagents (dimethylphenylsilyllithium and methyldiphenylsilyllithium) and temperatures (-40 °C and -78 °C) were performed to determine the effect of each variable. Product yields and stereochemical ratios were determined by <sup>1</sup>H-NMR spectroscopy using a hexamethylbenzene internal standard. The highest yield was obtained by treatment of 1 with 1.25 equivalents of dimethylphenylsilyllithium in 5:1 diethyl ether/THF at -78 °C, giving the corresponding silyl enol ether in 91% yield and with excellent stereoselectivity (83:17 E:Z). The highest stereoselectivity was obtained by treatment of 1 with 1.25 equivalents of methyldiphenylsilyllithium in 5:1 diethyl ether/THF at -78 °C, giving the corresponding silyl enol ether in 86% yield as the pure E stereoisomer. Various differentially substituted acyloin derivatives were prepared and reacted to determine the scope of the reaction. Siloxide and carboxylate leaving groups were found to be effective, however an alkoxide leaving group gave a significantly lower yield. Acyclic substrates with an effective leaving group generally gave excellent yields (66–99%), however a cyclic acyloin derivative gave only a trace of desired silyl enol ether. Stereoselectivity was also generally excellent, with typical E:Z ratios around 90:10.

## PALLADIUM-CATALYZED HOMOCOUPLING OF ARENEDIAZONIUM SALTS: AN OPERATIONALLY SIMPLE SYNTHESIS OF SYMMETRICAL BIARYLS

*Robinson, M. K., Kochurina, V. S. & Hanna, J. M., Jr.*

*Published in Tetrahedron Letters Volume 48, 2007*

*Supported by Winthrop University Research Council Grants, 2006/2007*

**Monique K. Robinson, 2009**

**Vasilina S. Kochurina, 2010**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*James M. Hanna Jr., Ph.D.*

The symmetrical biaryl unit is prevalent in a number of biologically active natural products such as the michellamines, which have received recent attention as potent anti-HIV agents, as well as in ligands for chiral catalysis such as the BINOLs. Symmetrical biaryls have traditionally been produced from aryl halides using a stoichiometric amount of copper metal or a copper(I) salt (the Ullmann reaction), or in catalyzed processes using nickel or palladium compounds along with a stoichiometric amount of a secondary reductant (such as zinc). Although the homocoupling of arenediazonium salts using stoichiometric amounts of a copper(I) salt is known as a route to symmetrical biaryls, catalytic methods are not as well studied. Our efforts in this area have led to the development of a palladium-catalyzed homocoupling of arenediazonium salts using palladium acetate in methanol solvent. The procedure is operationally simple; it is carried out in air using commercially available reagents and solvents, and does not require an external reductant. Both symmetrical biaryls and arenes (reduced products) are formed



under these reaction conditions. In general, electron-rich substrates gave good yields of the desired biaryl and very little of the reduced arene by product. Electron-neutral and electron-poor substrates gave lower yields of desired biaryl, along with lower biaryl/arene ratios. It was found that the product yield and distribution was affected by reaction concentration, catalyst loading, and catalyst type. Palladium acetate was found to be the most optimum catalyst. Higher reaction concentrations favored the formation of the biaryl over arene, but at the expense of total yield. Catalyst loadings of 10 - 20 mol% led to similar yields and biaryl/arene ratios, while lower catalyst loadings gave lower yields and a greater proportion of arene. It was also found that chemoselective homocoupling in bromo-substituted arenediazonium salts could be accomplished, thus allowing further transformations to be carried out on the product. Based on these findings, a scope and limitations study was conducted on a number of arenediazonium tetrafluoroborates, with yields of symmetrical biaryls ranging from 0 to 88%.



## Honors Thesis Abstracts



### DO THE WHITE WING PATCHES ON NORTHERN MOCKINGBIRDS (*MIMUS POLYGLOTTOS*) TRANSMIT ENOUGH UV LIGHT TO ACT AS “FLASHLIGHTS”?

*Presented at the Winthrop University Department of Biology Seminar, Rock Hill, S.C., November 2007*

*Supported by the Lockett Davis Endowment Award, Winthrop University, 2007*

*Awarded the Houk Prize for Undergraduate Research in Biology, January 2008*

**Diana Soteropoulos, 2007**

*Department of Biology*

*Honors Thesis Committee:*

*William Rogers, Ph.D.*

*David Rankin, Ph.D.*

*James Johnston, Ph.D.*

Many birds see ultraviolet (UV) light, which humans cannot see. Therefore, UV vision must be considered when studying avian behavior, as UV wavelengths may be used in intraspecific and interspecific communication, and thus, UV could be used for foraging by birds as well. Many prey items also reflect UV light, which could be used as signals by predators. In this study, I analyze the relative amount of UV light transmitted through the white patches on the primary feathers of ten male northern mockingbirds compared to the darker secondary feathers. I hypothesized that more UV light is transmitted through the feathers without melanin compared to the feathers with melanin, which could effectively create a UV “flashlight” that northern mockingbirds may use to find prey items.

The relative area of white on each wing and the percent transmission of UV light through each patch vary, but the relative size of the white patch does not predict the percent of UV transmission. Therefore, each wing has the same intensity of UV light transmitted through the white patch, and larger white patches indicate larger flashlights. I could not test the influence of age or sex on the underlying variation of the relative area of white on the patch as all of the specimens were males and the age of only one specimen was known. No trend could be determined based on geographical location of specimens.

## THE HEALING WAY OF LIFE

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Casserly Daniels, 2008**

*Department of Psychology*

Honors Thesis Committee:

*Lee Miller*

*Cheryl Ann Fortner-Wood, Ph.D.*

*Mary Schweitzer, Ph.D.*

The traditional Native American way of life has all but diminished into the past. Nowhere is this more evident than in the healing and religious rituals of the tribes. This paper will investigate the relationship between Shamanistic healing rituals and religion of the Southeastern United States' peoples. Drawing on in-depth interviews and a short questionnaire, the specific focus will be on the Catawba Nation of South Carolina. With this paper I will try to discover the presence and/or place for traditional healing practices and religious rituals in the modern Native American's life.

## THE RELATIONSHIP BETWEEN ADOLESCENT INVOLVEMENT AND YOUNG ADULTS' EXPERIENCES IN COLLEGE

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Brooke Currie, 2008**

*Department of Psychology*

Honors Thesis Committee:

*Merry J. Sleigh, Ph.D.*

*Kathy Lyon, Ph.D.*

*Darren Ritzer, Ph.D.*

Youth who are involved in extracurricular activities show a number of positive characteristics such as higher self esteem, academic success, and access to social capital (Larson, Hansen & Moneta, 2006; Fredricks and Eccles, 2006). My project studies young adults' involvement in extracurricular activities during middle school and high school in relation to their involvement in college as well as the relationship of involvement to self-esteem and academic experiences in college.

## THE DEAD MAN WALKING EXPERIENCE: AN ACTOR'S PERSPECTIVE OF THEATRE AS SOCIAL COMMENTARY

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Amber Marie Baragona, 2008**

This thesis will look at the 2007 Winthrop University production of the play Dead Man

*Department of  
Mass Communication*  
Honors Thesis Committee:  
*Annie-Laurie Wheat, M.F.A.*  
*D. Haney Howell, M.A.*

Walking and analyze, from an actor's perspective, the ways in which theatre can serve as a form of social commentary and how an actor prepares for performing such a work at the collegiate level. Components of the thesis will include background research of the play, *The Dead Man Walking* School Theatre Project, and the book *Dead Man Walking*. It will look into the initiatives of the Death Penalty Discourse Network and its work as a national project to raise awareness of issues surrounding the use of the death penalty in the United States. Rehearsal reports, actor journals on the rehearsal process, line notes from the director, a meeting with the author and main character Sister Helen Prejean, a visit to a prison and other informational events will be referenced for the thesis. A look will further be given at how Winthrop University used this show as a collaborative project with the Peace, Justice and Conflict Resolution Studies to create the Death Penalty Awareness Series at Winthrop. The thesis will be presented in the form of an actor's notebook. In addition, a short film will be produced to highlight and comment on the research conducted and show scenes from the Winthrop production of *Dead Man Walking*.

## LINGUISTIC IRREGULARITIES OF LEGAL LANGUAGE AND THE SCHOLARLY DEMAND FOR REFORM

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Christina Williams, 2008**

*Department of English*  
Honors Thesis Committee:  
*Kelly Richardson, Ph.D.*  
*Jack DeRochi, Ph.D.*  
*David Meeler, Ph.D.*

The presence of law in the literature occurs in both classic and contemporary works, but the relationship of language to the legal profession is not a seamless transition. The register of legal language exists as an extreme deviation from Standard English and has evolved into a systematic entity of its own. Its peculiar existence has not escaped the scrutiny and criticism of legal actors and scholars alike who target specific linguistic irregularities unique to the legal register. The historical development of legal language demonstrates many of the linguistic attributes that make legal language such a difficult and protracted deviation of Standard English. The overwhelming presence of Latin and French on the lexical and syntactic level of language attests to the multi-lingual influence in England over the span of centuries, and the rhythmic yet redundant features of legal language demonstrates the perpetuation of Old English poetic technique into modern English language law. Such linguistic peculiarities have ignited both debate and reform movements on a legislative and educational level, marking a turning point for the development of legal language. Despite calls for reform, however, the ability of the legal register to maintain such diverse and peculiar language attributes demonstrates both the flexibility and durability of the English language.

# MOLECULAR EVOLUTION OF FOOT-AND-MOUTH DISEASE VIRUS

*Presented at NCUR 22, Salisbury, Md., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a Winthrop University Research Council Grant*

**Jessica N. Cooke, 2008**

*Department of Biology*

*Faculty Mentor:*

*Kristi M. Westover, Ph.D.*

Honors Thesis Committee:

*Kristi M. Westover, Ph.D.*

*Laura Glasscock, Ph.D.*

*James Johnston, Ph.D.*

*Kathy Lyon, Ph.D.*

Foot-and-mouth disease (FMD) is one of the most contagious animal diseases with the potential to cause substantial economic losses. The causative agent, foot and mouth disease virus (FMDV) is a positive-sense, single stranded RNA virus of approximately 8,500 nucleotides and a member of the family Picornaviridae. There are seven worldwide recognized FMDV serotypes (A, C, O, Asia 1, and SAT 1-3). FMDV vaccinations currently exist, but are forbidden in the United States and Europe because of the difficulty in distinguishing between vaccinated and unvaccinated animals. Vaccination strategies involve separate inoculations with individual strains to protect against the possibility of re-infection with different serotypes and it has been suggested that vaccines be tailor-made for specific geographic regions where different serotypes overlap. It is therefore imperative to understand how host selection has influenced evolution of individual FMDV serotypes. Pairs of closely-related FMDV genomes identified in a phylogenetic analysis representing all seven serotypes were examined in order to understand the long term effects of host selection on well-characterized antigenic regions of importance (B, TH, and TC). Estimates of synonymous and non-synonymous substitution rates for antigenic and non-antigenic regions were calculated for individual pairs of FMDV genomes. Consistent with previous studies, we found that on average, both antigenic and non-antigenic regions were subject to purifying selection acting at non-synonymous sites and that several antigenic sites showed a pattern of nucleotide substitution suggesting repeated positive selection across the population. However, we found that antigenic regions from the individual FMDV serotypes differed with respect to the extent of amino acid conservation. For a TH epitope currently used in one synthetic vaccine, we found that serotypes SAT 1-3 had significantly greater non-synonymous nucleotide substitutions than the other serotypes. In contrast, in a second well-studied B-cell epitope, there were no serotype-dependent differences in synonymous or non-synonymous nucleotide substitutions. These results support the hypothesis that host selection acting on individual serotypes has been an important factor in the long-term evolution FMDV and needs to be considered for vaccine design.

# I'LL DO IT TOMORROW

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Lisa Zarick, 2008**

*Department of Psychology*  
Honors Thesis Committee:  
*Kathy Lyon, Ph.D.*  
*Robert J. Stonebraker, Ph.D.*  
*Gary Stone, Ph.D.*  
*Laura Ullich, M.A.*

Procrastination is the art of keeping up with yesterday” (Don Marquis). This art can be practiced by anyone, but college students seem especially adept at its practice. And, while professors often complain about student procrastination, economists have begun modeling it as a perfectly rational behavior. Using such concepts as salience cost, task aversion, and belief about future behavior, the economic literature develops hypotheses about why people procrastinate and what can be done to avoid it. According to economists, differences in perceived costs and benefits across individuals and across time can explain who procrastinates and under what circumstances they procrastinate. Using survey data collected from Winthrop University students and faculty members, this thesis will attempt to test some of these hypotheses.

# RELEASE OF CARDIAC TROPONIN-I AND OTHER CYTOKINES IN A 3D CARDIAC TUBE TISSUE CULTURE SYSTEM UNDER HYPOXIC CONDITIONS

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008 and the  
Tri Beta Biological Honors Society Southeastern Regional Conference, Greenville, S.C., April 2008  
Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a Beta Beta Beta  
Biological Honors Society Grant*

**Shreya S. Acharekar, 2008**

*Department of Biology*  
Honors Thesis Committee:  
*Dwight D. Dimaculangan, Ph.D.*  
*Laura Glasscock, Ph.D.*  
*Paula Mitchell, Ph.D.*  
*Kathy Lyon, Ph.D.*

During a myocardial infarction (MI), ischemia and hypoxia cause a loss of cardiac function through apoptosis and necrosis, which is further complicated by inflammation and an immunological response. To understand how cardiac tissue responds to injury independent of the in vivo complexities, a 3D cardiac tissue culture system was used to model a MI by exposing the cultures to hypoxia and hyperoxia. To determine if they mimic in vivo tissue, we measured the release of inflammatory cytokines (IL-1, IL-6, and TNF-) and myocyte cell death (cTnI) after exposing the cardiac tubes to 21% oxygen (hyperoxic), 6% oxygen (normoxic), or 1.5% (hypoxic) conditions. The cTnI and IL-6 cytokine levels for the 21% tubes were significantly different than the 6% tubes. Overall, the results indicate that

different cellular pathways are associated with the oxidative stress under hypoxia as compared to the stress associated with hyperoxia.

## THE RELATIONSHIP BETWEEN SOCIAL JUSTICE AND CHRISTIANITY

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Jessica L. Bean, 2008**

*Department of Philosophy  
and Religious Studies*  
Honors Thesis Committee:  
*Peter J. Judge, Ph.D.*  
*William P. Kiblinger, Ph.D.*  
*Virginia Williams, Ph.D.*

There is a relationship that can be found between social justice movements and the Judeo-Christian faith. It is this relationship that stems from an understanding of the Jewish and Christian biblical scriptures as well as a perspective which supports the belief that to know God is to know justice. A reading of various scriptures, such as those found in the book of Amos, the Beatitudes of Jesus in the Gospels, the Epistle of James, and the Letter to Philemon, provides a foundation for understanding why there is a correlation between knowing God and pursuing social justice for the marginalized. From this perspective there have been figures throughout history who were followers of the Judeo-Christian faith and who reflected their faith in a struggle to end social injustice. Liberation Theology was a movement started from the same idea that God has a preferential option for the poor and a conviction that, therefore, the church must embrace the poor as well. Though there has been opposition to this perspective on theology, those who remain convinced that their faith must manifest itself in their actions for the poor maintain that to know God is to pursue justice.

## CURRICULA CONTENTION IN THE PALMETTO STATE: THE BATTLE OVER THE TEACHING OF EVOLUTION IN SOUTH CAROLINA

**Renee Thompson, 2008**

*Department of Political Science*  
Honors Thesis Committee:  
*Stephen S. Smith, Ph.D.*

The teaching of evolution in United States public schools has provoked controversy in numerous states and localities. Recently, the South Carolina State Board of Education debated the use of a textbook in high school biology courses, which specifically emphasizes the importance of evolution in understanding life on Earth. Although South Carolina is among the nation's most conservative states, the State Board of Education approved the

*Karen Kedrowski, Ph.D.* use of the textbook in January 2008. This thesis investigates reasons for this endorsement  
*Scott Huffmon, Ph.D.* by exploring, among other things, the influence of: advocacy groups; board members' occupations, political affiliations, and education; the extent to which board members were willing to defer to the judgment of professional educators; and the nature of the policy venue in which this unusual outcome occurred. The findings of this investigation are then compared to the research on similar controversies elsewhere, which allows the thesis to contribute to the theoretical understanding of political battles over what scholarly literature has called contentious curricula.

## THE ROLE OF THROMBOMODULIN IN ANGIOGENESIS

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008, the Tri Beta Biological Honors Society Southeastern Regional Conference, Greenville, S.C., April 2008, Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Diego, Calif., April 2008*  
*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE, a Winthrop University Research Council Grant, and the McKay Urology Endowment Fund*

### **Amanda Clark, 2008**

*Department of Biology*  
Honors Thesis Committee:  
*Laura Glasscock, Ph.D.*  
*ames W. Johnston, Ph.D.*  
*Kristi Westover, Ph.D.*

We investigated the role of the endothelial cell (EC) receptor, thrombomodulin (TM), in angiogenesis by determining its contribution to EC microtubule formation, invasion and cell-cell adhesion. We first established a method to quantitate microtubule formation in vitro using stereology. Digital images of HUVECs grown in Matrigel(TM) were overlaid with a 4800-pixel grid. The mean number of points where one of the grid's vertices crossed a microtubule was determined and divided by the number of vertices per well (surface area covered by microtubules). Using this quantitative method, we determined that monoclonal antibody (MAb) binding to epidermal growth factor-like domains 4-6 of TM increased microtubule formation. Addition of thrombin, which binds to these EGF-like domains, decreased the augmented microtubule formation. We also investigated TM's involvement in EC invasion in vitro. Binding to the lectin-like domain of TM by MAb decreased invasion of HUVECs. Finally, we determined that binding to TM's extracellular EGF-like domains affected the ability of HUVECs to adhere to each other. We conclude that TM, specifically the EGF- and lectin-like domains of TM, is involved in angiogenesis by regulating the ability of endothelial cells to proliferate, invade, and adhere to each other.



# RELATIONSHIP BETWEEN VIDEO GAME PLAY BEHAVIORS AND RISKY SEXUAL BEHAVIORS

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Kathleen Jocoy, 2008**

*Department of Psychology*  
Honors Thesis Committee:  
*Donna Webster Nelson, Ph.D.*  
*Cheryl Fortner-Wood, Ph.D.*  
*Kathy Lyon, Ph.D.*

Exposure to community violence and video game violence often yields similar outcomes: deficiencies in school (Anand, 2007; Cummings & Vandewater 2007) and increased aggressiveness (Anderson & Murhpy, 2003; O'Keefe, 1994). This study explored another potential outcome, that of increased sexual risk (Voisin, 2005). Data concerning video game play behaviors, sexual behaviors, and self-reported callousness were collected and analyzed from 64 college students. Percentage of time spent playing violent video games predicted decreased condom usage. Hours spent playing violent video games also predicted heightened self-reported callousness. Higher callousness scores predicted overall sexual risk, particularly having sex with new acquaintances. These findings suggest that exposure to violent video games may subsequently influence sexual decision making by causing the gamer to hold more callous attitudes and disregard the importance of sexual safety.

# THE SUBLIMINAL SELF GOVERNANCE OF THE AESTHETIC IDEAL

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

*William Joseph Maye, 2008*

*Department of Political Science*  
Honors Thesis Committee:  
*Michael Lipscomb, Ph.D.*  
*David Meeler, Ph.D.*  
*Brad Tripp, Ph.D.*

The realm of aesthetics rests within the subliminal preferences of the individual subject and allows the subject to mold himself or herself on the basis of an infinite range of variables in a manner that is lodged between instinctual subconscious values and the conscious exercise of judgment. This essay will address basic conceptual foundations of major social scientists and theorists including Immanuel Kant, Emile' Durkheim, Max Weber, Karl Marx, Socrates, Friedrich Nietzsche, and Michel Foucault in an effort demonstrate that the aesthetic ideal is paramount to their respective theories. The aesthetic perception of humanity is the absolute foundation to the development of the individual. This function, coupled with the socialized need for conformity allows the aesthetic ideal to transcend the role of individual specification to the governance of human society, ultimately causing the destruction of the very individuality it creates.

# FOREIGN LANGUAGE LEARNING AND LEARNING DISABILITIES: WHAT CAN BE DONE IN SCHOOLS?

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

**Allison Smith, 2008**

*Department of Psychology*  
Honors Thesis Committee:  
*Elke Schneider, Ph.D.*  
*Brad Witzel, Ph.D.*  
*Kathy Lyon, Ph.D.*

This project highlights essential teaching and learning issues related to foreign language acquisition and learning disabilities, specifically dyslexia. An overview of research on specific learning needs of individuals with dyslexia in this context provides a foundation for understanding the evidence-based strategies for foreign language teachers. These strategies provide a springboard for success in learning a foreign language in mainstream classrooms for students with dyslexia. These are essential in light of high stakes testing and an increase in college programs requiring foreign language course work.

# “PASSION AND RESIGNATION”: AWAKENING SYMPATHY IN THE PREFACES OF OROONOKO, UNCLE TOM’S CABIN, OUR NIG, AND INCIDENTS IN THE LIFE OF A SLAVE GIRL

**Ariel Libet, 2008**

*Department of English*  
Honors Thesis Committee:  
*Kelly Richardson, Ph.D.*  
*John Bird, Ph.D.*  
*Litasba Dennis, Ph.D.*

This paper examines four anti-slavery works by women: Aphra Behn’s Oroonoko, Harriet Beecher Stowe’s Uncle Tom’s Cabin, Harriet Wilson’s Our Nig, and Harriet Jacobs’ Incidents in the Life of a Slave Girl. It is through the prefaces of these works that a conversation between author and reader begins about the evils of slavery. Through describing the function of prefaces, the appeal to sentimentality, the role of the female author, and cultural influences, I intend to reveal that all four women use their prefaces in combination with their works to fulfill their political agenda.



## Meeting Abstracts



### ON NIETZSCHE'S THEORY OF TRUTH AS METAPHOR

*Presented at NCUR 22, Salisbury, Md., April 2008*

**Joe Garnett, 2009**

*Department of Philosophy  
and Religious Studies*

*Faculty Mentor:  
Gregory Oakes, Ph. D.*

The presentation concerns the coherence of Nietzsche's account of human knowledge. I first summarize Nietzsche's position, as expressed in the essay "On Truth and Lying in the Non-Moral Sense" (TL). In TL, Nietzsche asserts that human knowledge merely amounts to metaphor because humans have no access to things-in-themselves and therefore rely on interpretations of sensory data. I then examine and attempt to refute the arguments of the opposition, focusing on Maudemarie Clark. Clark argues that Nietzsche adopts three separate positions throughout the essay-two of which are unable to back up Nietzsche's claim and one of which does not fit in with the rest of his system. After offering my own criticism of Clark, I analyze Christian Emden's criticism that Nietzsche's view of truth as metaphor must be seen within the context of its time period. Emden's argument is not ultimately satisfactory in proving Nietzsche's position since it raises another objection: How can Nietzsche claim that all sensory input is metaphorical (and, as such, separated from Truth) if his basis for his account is biological? I then attempt to resolve this paradox in a way that Nietzsche could accept. Either humans can obtain some measure of useful (albeit metaphorical, in Nietzsche's account) information from their senses or they cannot. If humans can, then Nietzsche's biological account of truth as metaphor is proven empirically. And if they cannot, then Nietzsche's account of truth as metaphor can be said to instead describe humans' metaphorical interpretation of mental stimuli as constituting an outer world.

## LOPEZ AND BARABAS: THE TWO FACES OF SHYLOCK

*Presented at the University of Virginia's College at Wise Medieval-Renaissance Conference XX,  
Wise, Va., September 2007*

**Rachel Bishop, 2008**

*Department of English  
Faculty Mentor:  
Matthew Fike, Ph.D.*

Shakespeare's Shylock in *The Merchant of Venice* is a difficult character to categorize because he has both positive and negative characteristics. It is almost as if he is the by-product of multiple hands. My paper approaches this interpretive problem in light of historical influence and source study in order to suggest an explanation for the apparent paradox of Shylock. A popular theory of Shylock's origin is the controversy surrounding Elizabeth's court physician, Dr. Roderigo Lopez, who was framed for treason and eventually executed. Though there may be similarities between Shylock and Dr. Lopez, Shakespeare's Jew probably develops more directly from Marlowe's Barabas in *The Jew of Malta*. Considering the strong parallels between Shylock and his historical and literary antecedents, it is likely that they both played a role in Shakespeare's creation of the character. Therefore an attempt to link Shylock solely to Lopez or Barabas is a historical red herring. My paper argues that Dr. Lopez influenced the positive and pitiable aspects of Shylock and that Shakespeare used Marlowe's Barabas as a model for the more villainous, criminal-like side of Shylock's personality. Shakespeare's evident sympathy for Lopez and other Jews in Elizabethan society may account for Shylock's marginal role in the play's comic ending, whereas Marlowe's Jew inhabits a purely tragic world. Likewise, the Marlovian influence explains Shylock's darker qualities and the way he brings the play closer to tragedy than any of the comedies except perhaps *Measure for Measure*. The paper concludes by suggesting that Shylock's paradoxical nature is not necessarily the result of multiple hands. More probable, the character's positive and negative faces illustrate the semi-corporate authorship stressed by New Historical critics. Shylock reminds us of Shakespeare's eclectic method of composition.

## END CREDITS: AN ANALYSIS OF CONTEMPORARY CONTAGION FILMS AND THE ESCHATOLOGY OF THE APOCALYPSE MYTH

*Presented at the South Carolina Political Science Association Meeting, Orangeburg, S.C., March 2008  
and at NCUR 22, Salisbury, Md., April 2008*

**R. Lane Lovegrove, 2008**

In an era where so much attention is placed on SARS, AIDS, monkey pox, and bioterror-

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ism, the type of fiction that exploits our fear of contamination also plays on a subliminal strain of xenophobia. As portrayed in cinema an integrated, post-contagion apocalyptic society, there exists a struggle against repressive authority, which becomes the realization of this inherit xenophobia reflective of society as a whole. The characters survive not only the contagion but then the break down of society, and then go through a grieving period, an era of social conflict, and finally an epic journey. The characters cultivate the use of primitive weapons and deal with the scarce distribution of resources in an environment devoid of living masses of people but often populated with zombies, vampires, and demonic forces. The eschatology of the contagion-apocalypse myth in film forms a new synthesis from psychic or social revival in an internal and external revolution that integrates social and political idealism. This type of eschatology goes beyond the aspects of myth and well into film when there is evidence that media often shifts from alarming to reassuring coverage when a 'hot crisis' portends a possible grass root panic. The cinema that is framed in a contagion-apocalyptic narrative based on real world events is often linked to an ensemble of related issues. This would seem likely to engender panic if a 'hot crisis' portends the film. Contagion-apocalypse cinema is exempt because the organizing principle, of which there is both a dissenting perspective of apocalypse to criticize political and social structures, and an eschatological perspective of apocalypse, is used to comment upon the structures of time frames, and becomes its own cautionary Hollywood tale.

## **“A DIFFERENT WAY OF WORKING:” IMAGE AND METER IN “THE LOVE SONG OF J. ALFRED PRUFROCK” AND FOUR QUARTETS**

*Presented at the Winthrop University English Department Graduate and Undergraduate Conference,  
Rock Hill, S.C., February 2008*

**Kendall Lentz, 2010**

*Department of English*  
*Faculty Sponsor:*  
*Marguerite Quintelli-Neary, Ph.D.*

T.S. Eliot, in a well-noted 1917 essay, “Reflections on Vers Libre,” stated that he believed all poetry could be scanned and that free verse, or Vers Libre, did not exist. However, by examining his earlier work, such as “The Love Song of J. Alfred Prufrock” and comparing it to his later Four Quartets, considered by himself to be his best work, a careful reader becomes aware of a movement away from structured meter and rhythms as well as concrete images. Instead of the heavy iambic feet and tangible images prevalent in “Prufrock,” it can be noted that a large portion of Four Quartets is comprised of abstract philosophical concepts and seemingly prose-like lines, in that many lines have no discernable rhythm or rhyme scheme. The development of his work is most likely tied to his maturation in terms of his personal conversion to

Christianity and this essay attempts to demonstrate how Eliot, as he aged and studied Christian theology, could have found the thinking of his Prufrock character to be too simplistic. By studying both “The Love-song of J. Alfred Prufrock” and Four Quartets, the reader should begin to understand how Eliot may have felt the old techniques of poetry, such as concrete images and metered rhythms were inadequate to represent his (and presumably man’s) truth—that man does not search of his own truth, but rather his search is for a higher being, to whom he gives both his life and his journeys. Because these ideas of the “Absolute” are intangible, Eliot’s poetry evolved to reflect them and the reader is able to come to an abstract “sense” of truth as opposed to a truth perceived and articulated through the physical senses. Concrete images, such as “yellow fog that rubs its back upon the windowpanes” (“The Love Song of J. Alfred Prufrock”) are instead replaced with abstract concepts like, “Time present and time past/Are perhaps present in time future” (“Burnt Norton”). The audience knows that Eliot was aware of this change away from older techniques, as the speaker in “Little Gidding” says that “we cannot restore old policies/Or follow an antique drum.” Eliot believed that as a poet matures he should be able to “adapt himself to middle age and find a different way of working” and this essay demonstrates that for Eliot, a “different way” was to move away from structured rhythms and physical images and move towards free verse and abstract concepts when necessary to represent large, philosophical ideas.

## THE FEMME FATALE ARCHETYPE IN IDYLLS OF THE KING AND THE RETURN OF THE NATIVE

*Presented at the Sigma Tau Delta International Conference, Louisville, Ky., March 2008*

*Presentation Supported by a SPAR Grant*

### **Caley Crull, 2008**

*Department of English*

*Faculty Mentor:*

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Archetypes are universal images or representations of a force that is present and recognizable in all people. The femme fatale, or fatal woman, archetype is portrayed by such literary characters as Helen of Troy and Medea; the actions of these women doomed those around them. Alfred Lord Tennyson and Thomas Hardy follow literary tradition and employ the femme fatale archetype in their works *Idylls of the King* and *The Return of the Native*, respectively. Vivien of *IOTK* and Eustacia Vye from *TROTN* serve as archetypal images of the femme fatale as they aid in the downfall of the people around them; Vivien’s triumph over Merlin acts as another link in the breakdown of Camelot, whereas Eustacia destroys the two men in her life, Damon Wildeve and Clym Yeobright. The imagery used in describing the two characters suggests their fatal nature. Snake images surround Vivien, and Eustacia is the “Queen of Night” with passions that do not quite fit the model woman. Both women are very sensual in nature and are able to exert control over the men in their lives. In addition to a sexual control, both women have a bewitching quality about them that allows them to use their feminine wiles to gain complete control of the men. Vivien is

already considered a witch for the havoc she tries to wreak on Camelot, and Eustacia is thought to be a witch by members of the community, so the women's supernatural qualities are established to illustrate another way in which they control those around them. Because both women completely control the men in their lives, they then begin to destroy them and the world around them. In Eustacia's case, she is fatal even to herself at the end of Hardy's novel. Both characters completely portray the femme fatale archetype through their ability to manipulate those people around them to death and destruction.

## PARENTAL INTERVENTION IN SIBLING CONFLICT AND ADULT SIBLING RELATIONSHIP QUALITY

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Amy Haley, 2008**

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*Merry J. Sleight, Ph.D.*

The purpose of this study was to see how parental intervention strategies into sibling conflict related to sibling relationship quality in early adulthood. Participants completed a survey that assessed parental intervention strategies and included questions from the Adult Sibling Relationship Questionnaire (Lanthier & Stocker, 1992) and the Adult Sibling Survey (Family Research Group, 2006). The more the mother intervened, the less likely the participants were to resolve conflict on their own,  $r = -.45, p < .01$ . Siblings who worked out their problems without maternal intervention were more likely to currently view that sibling as a good friend,  $r = .27, p < .01$  and were less likely to report conflict with siblings,  $r = -.33, p < .01$ . Older children were more likely than middle children to report that mother intervened too much,  $F(2,57) = 3.84, p < .05$ . Higher father intervention (FIS) resulted in a greater likelihood of participants agreeing that if they had problems, they would contact their siblings,  $r = .27, p < .05$ . When siblings worked out conflict without a mother's help, the FIS decreased,  $r = -.29, p < .05$ . Same-gendered siblings wished that fathers intervened more in sibling conflict,  $t(51) = 2.10, p < .05$ , while different-gendered siblings reported a higher FIS,  $t(51) = -2.45, p < .05$ . Men were more likely than women to agree that father intervened too much,  $t(51) = 2.48, p < .05$ . Participants who were older than their closest-aged sibling were more likely to think of their sibling as a friend,  $t(59) = 2.36, p < .05$ , while siblings who were younger were more likely to report that their sibling irritated them,  $t(59) = -2.10, p < .05$ . The closer in age the participants were to their closest-aged siblings, the more they experienced conflict,  $r = -.28, p < .05$  and physical confrontations,  $r = -.36, p < .01$ , with those siblings. Results revealed that siblings who solved conflict on their own, apart from maternal intervention, were less likely to report conflict with their sibling and more likely to report that they considered their adult sibling a good friend.

# GENDER, PAST CHEATING, WORK EXPERIENCE, AND DECEPTION IN THE WORKPLACE

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Latasha Sherod, 2008**

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This study assessed gender, work experience, willingness to deceive, and perceptions of deception in the workplace. Sixty undergraduates and faculty completed a survey that assessed work experience, willingness to deceive, and perceptions of deception in the workplace. The more hours participants worked per week, the less likely they were to agree that they missed work due to health reasons,  $r = .30$ ,  $p < .05$ . The more hours participants had worked over their lifespan, the less likely they were to take sick leave if they were not sick,  $r = -.27$ ,  $p < .05$ , and the less they agreed that people are dishonest when being evaluated on the job,  $r = -.38$ ,  $p < .01$ . The more participants agreed that they had cheated on a college test, the more they agreed that it is acceptable to call in sick to work when not actually sick,  $r = .31$ ,  $p < .05$ , and the more they agreed that they often miss work for health reasons,  $r = .45$ ,  $p < .01$ . Participants who agreed they cheated on a high school test also agreed that they often miss work for health reasons,  $r = .29$ ,  $p < .05$ . Men were more likely to agree that they get into disputes with their co-workers,  $t(58) = 2.17$ ,  $p < .05$ . Women were more likely to recommend their job to an associate,  $t(58) = -2.58$ ,  $p < .05$ . There were no other gender differences. In comparison to faculty, students were more likely to agree that people use their sick leave when they are not sick,  $t(58) = -2.98$ ,  $p < .01$ , and that people are dishonest when being evaluated on the job,  $t(58) = -2.37$ ,  $p < .05$ . There were no other differences between these groups, including no difference in past cheating behaviors. These findings suggest that length of employment may be related to higher personal investment in and more positive perceptions of the workplace. Cheating earlier in life was positively correlated with deceitfulness in the workplace, indicating that school may be an arena in which future employees develop patterns of behavior.

# IDENTITY DEVELOPMENT OF NON-HETEROSEXUAL COMPARED TO HETEROSEXUAL INDIVIDUALS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Bonita Davis, 2008**

**Trevin Colclough, 2007**

The purpose of our study was to focus on the identity processes of homosexual, bisexual, and transgender (HBLT) individuals as a minority group, using a minority perspective



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developed to study race. Participants were 68 women and 42 men, with a mean age of 20.30 years (SD = 2.70). Participants completed a modified version of the Cross Racial Identity Scale (Cross, 1991). Questions were modified to reference sexual identity rather than racial identity. Participants also completed a self-esteem measure (Rosenburg, 1965), a self-entitlement scale (Campbell et al, 2004), an index of homophobia (Vandiver et al, 2000), and a demographics inventory. There were no significant differences between the HBLT and heterosexual participants on the majority of identity constructs or on self-esteem and self-entitlement. One exception was that Pre-Encounter Self-Hatred was higher for HBLT than for heterosexuals,  $t(108) = 5.78, p < .01$ . Another difference was that heterosexuals reported higher levels of homophobia,  $t(108) = 6.72, p < .01$ . Caucasian heterosexuals had higher Self-Hatred scores,  $t(76) = 3.40, p < .01$ , and more negative attitudes toward homosexuals than did African-American heterosexuals,  $t(76) = 2.15, p < .05$ . The higher the education, the more homosexuals internalized a homosexual identity,  $r = .37, p < .05$ . The more heterosexuals internalized their sexuality, the more likely they were to be homophobic,  $r = .68, p < .01$ . The more close family and friends that are homosexual, bisexual, transgender participants had, the less homophobic they were,  $r = -.71, p < .01$ . We found the identity development of heterosexuals to be similar to that of non-heterosexuals, with the exception that non-heterosexuals had higher rates of self-hatred. This construct of self-hatred represents an early stage of identity development, when the adult is recognizing and accepting his sexual identity. Heterosexuals do not appear vulnerable to this unhealthy perspective. Despite this identity difference, the two groups did not differ on self-esteem or sense of entitlement. The HBLT individuals' internalization of self-hatred may be the result of homophobic attitudes revealed in the heterosexual participants, particularly by Caucasian adults. Homophobia was buffered by education and close relationships with non-heterosexuals.

## DANCE ATTIRE'S EFFECT ON BODY IMAGE AND SELF-ESTEEM

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Charlotte Lawson, 2008**

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This study investigated body image and self-esteem of ballet dancers based on dance attire. Participants were 21 female ballet students with a mean age of 19.33 years (SD = 1.11) and a mean number of years dancing of 11.69 years (SD = 4.81). The study was conducted in two different undergraduate ballet classes where the students in the first ballet class were asked to wear only a black leotard and pink tights, and in the second ballet class, the students were allowed to wear loose fitting clothing (t-shirts, cropped pants, etc.). At the conclusion of the class, the participants completed a survey that included questions that measured self perception, satisfaction, and confidence (Price & Pettijohn,

2006), the Single Item Self-Esteem Scale (Robin, 2001), and the Sensitivity to Criticism Scale (Rosenberg, 1965). There were no significant differences between the two classes, including no difference on body perception or comfort in class. Overall, participants were satisfied with their bodies and current weight. The higher the participants' reported weight, the less they agreed that their body was right for dancing,  $r = -.50, p < .05$ , and the lower their reported GPA in their dance classes,  $r = -.49, p < .05$ . The more years of ballet training that participants had, the more they agreed that they are good dancers,  $r = .45, p < .05$ , the more they agreed that they felt comfortable with their dance ability compared to their dance classmates,  $r = .73, p < .01$ , and the higher their reported dance GPA,  $r = .52, p < .05$ . The more the dancers felt dance was a way of life, the more they agreed that they are good dancers,  $r = .62, p < .01$ , the more they saw their body as right for dancing,  $r = .58, p < .01$ , and the more comfortable they felt with their dancing,  $r = .78, p < .01$ . The results revealed that the dance attire worn did not significantly affect the way the dancers viewed their bodies. Perhaps, the dancers' body contentment acted as a buffer against the effect of dance attire.

## RELATIONSHIP BETWEEN RELIGIOUS ORIENTATION AND YOUNG ADULTS' IMPLICIT RELATIONSHIP THEORIES

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

### **Brooke Currie, 2008**

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We examined the relationship between religious orientation and young adults' implicit romantic relationship theory. Participants completed a survey which included the Relationship Theories Questionnaire (Franiuk, Cohen, & Pomerantz, 2002), and the Allport and Ross Religious Orientation Scale (Allport & Ross, 1967; Rowatt & Schmitt, 2003). Participants received scores on the "soul mate" theory (SM), indicating a belief that satisfaction can only be found with one person, and the "work-it-out" theory (WIO), indicating a belief that a relationship could be satisfying with anyone as long as both persons are willing to work at it. Results revealed that more participants held the SM relationship theory and had higher intrinsic, than extrinsic, religious orientation scores. There were no significant relationships between religious orientation scores and romance theory scores. Participants in the SM category were more satisfied in their current relationships than participants in the WIO category,  $t(28) = 2.28, p < .05$ . Participants who were involved in a romantic relationship were more extrinsically oriented,  $t(60) = 2.79, p < .05$ , than those not involved in a romantic relationship. They were also more likely to believe living a moral life was more important than religious beliefs,  $t(61) = 3.39, p < .05$ , and to report that religion had no influence on their everyday lives,  $t(61) = 3.15, p < .05$ . Participants who had higher intrinsic religious orientation,  $t(60) = -3.14, p < .05$ , were more likely to attend church,  $t(61) = -2.84, p < .05$ , and to report their religious beliefs are behind their approach to life,  $t(61) = -2.82, p < .05$ . Participants without a religious affiliation were more extrinsic in reli-

gious orientation,  $t(60) = -3.23, p < .05$ , more likely to report religious beliefs did not matter as long as they lead a moral life,  $t(61) = -3.86, p < .05$ , and that religious beliefs had no influence on their everyday lives,  $t(61) = 3.39, p < .05$ . The opposite pattern was true for those with a religious affiliation. The results of this study support the notion that religious beliefs influence behavior and thought processes, even if not directly related to relationship theories.

## GENDER, RELIGIOSITY, SEXUAL HISTORY AND ATTITUDE TOWARDS FUTURE PARTNERS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Marjorie Jackson, 2008**

**Lea Queener, 2008**

**Randy Moss, 2009**

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This study examined relationships among young adults' sexual history, religiosity, and attitude toward the sexual history of romantic partners via survey methodology. Men reported being more sexually experienced than women,  $t(68) = 2.41, p < .05$ . Men also reported that they would prefer having sex with a partner with less sexual experience than themselves,  $t(68) = 4.90, p < .01$ , and to date someone with less sexual experience,  $t(66) = 2.72, p < .01$ . Men were more likely agree that they would prefer to marry someone with less sexual experience,  $t(67) = -2.26, p < .05$ , and were more likely to expect their future spouse to have less experience,  $t(67) = -3.27, p < .01$ . The higher the Religion Score, the fewer serious relationships the participants reported,  $r = -.34, p < .01$ , and the fewer times they reported being in love,  $r = -.30, p < .05$ . The higher the Religion Score, the less sexually experienced participants were,  $r = -.46, p < .01$ , and the less comfortable they were with their sexual experience,  $r = -.34, p < .01$ . The higher the Religion Score, the harder participants reported it being to trust partners with several past sexual partners,  $r = .26, p < .05$ , the harder they reported it being to trust their partners after engaging in mutual sexual activity,  $r = .33, p < .01$ , and the more they wanted to date a virgin,  $r = .61, p < .01$ . The higher the Religion score, the more participants cared about their partners' sexual experience,  $r = -.42, p < .01$ . The higher the Religion Score, the more participants reported wanting to marry someone with less sexual experience than themselves,  $r = -.28, p < .05$ , the more difficult they reported that it would be to accept their spouses' sexual past,  $r = .41, p < .01$ , the more they agreed that they would want to know the number of their spouses' past sexual partners,  $r = .25, p < .05$ , and the more important it would be to marry a virgin,  $r = .54, p < .01$ .

# YOUNG ADULTS' EXPERIENCES WITH AND ATTITUDES TOWARD CAREGIVING FOR PARENTS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Mike Connolly, 2010**

*Department of Psychology*

*Faculty Mentor:*

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We surveyed young adults regarding their experiences with and attitudes toward caring for their aging parents. Women were more likely to agree that they would support their mother emotionally,  $t(58) = -2.16, p < .05$ . Men were more likely to agree that they would prefer for others to care for their aging mother,  $t(58) = 2.19, p < .05$ . In contrast to African-Americans, Caucasians were more likely to agree that they would support their fathers emotionally,  $t(54) = 2.34, p < .05$ . African-Americans were more likely to agree that they had siblings to help care for their parents,  $t(55) = -2.37, p < .05$ . In contrast to non-caregivers, caregivers were more likely to agree that caregivers need professional training,  $t(57) = 2.05, p < .05$ , that people have a moral obligation to care for their parents,  $t(57) = 2.37, p < .05$ , and that businesses prey on the elderly,  $t(58) = 2.54, p < .05$ . In relation to their fathers, caregivers reported being more willing to live with them,  $t(57) = 2.55, p < .05$ , more willing to support them emotionally,  $t(57) = 2.41, p < .05$ , and more willing to provide them with intimate care,  $t(55) = 2.07, p < .05$ . The more participants agreed that caregiving is stressful, the worse their own health,  $r = -.34, p < .01$ , and the worse their parents' health,  $r = -.27, p < .05$ . The more participants agreed that caregiving is stressful, the more they agreed that caregiving requires professional training,  $r = .26, p < .05$ , that government agencies should pay,  $r = .33, p < .05$ , and that their spouses' opinion would influence their caregiving decisions,  $r = .28, p < .05$ . The less the participants' parents had planned for their own future, the more stressful the participants perceived caregiving to be,  $r = -.30, p < .05$ . In general, young adults perceived caregiving to be stressful, particularly those who were in poor health or had sick parents. These findings may be beneficial to today's young adults who are likely to find themselves caring for an aging parent.

# RACE, GENDER, AND EMOTIONAL DIFFERENCES IN TEMPORALLY BASED THOUGHT PATTERNS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Saradina Allen, 2006**

**Elizabeth Allen 2008**

We examined whether gender differences exist in emotions and thoughts related to the past, present, and future. Men spent more time during the last 5 minutes thinking about

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the past,  $t(120) = 2.38, p < .05$ . Women were more likely to reflect on social interactions when they thought about the past,  $t(120) = -2.16, p < .05$ . Men believed the typical man spends less time thinking about the present than women believe he spends thinking about the present,  $t(120) = -5.0, p < .01$ . Women reported that the typical woman thinks about the future more than men think the typical woman thinks about the future,  $t(119) = -2.57, p < .05$ . Caucasians spent more time in the last day thinking about the past than did African-Americans,  $t(114) = -3.38, p < .01$ . The more time participants spent thinking about their past over the last hour, the more negative their emotions about the past were,  $r = -.31, p < .01$ . The less participants agreed that they had the ability to control their own thoughts, the more time they spent in the last hour thinking about the past,  $r = -.19, p < .05$ . The more time participants spent thinking about the present over the last hour, the more positive their emotions of the present were,  $r = .25, p < .01$ . The more negative their present thoughts were, the harder it was for participants to keep their thoughts in the present,  $r = -.42, p < .01$ . The more participants thought about future interactions, the more positive their emotions of the future were,  $r = .29, p < .01$ . In sum, adults who felt negatively about their past or who could not control their thoughts spent more time reflecting on the past, while adults who felt positively focused on the present or future. Despite the limited gender differences, men and women held very different perspectives on one another. These findings suggest that the perceptions of gender differences are greater than the differences themselves.

## THE INFLUENCE OF PERSONALITY AND VALUES ON ATTITUDES TOWARD VOTING

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

### **K. Juree Capers, 2008**

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

We examined the strength of personality and values on voting attitudes in the United States. In reference to values, the higher the stimulation score, the more participants agreed that they will support any party that shares their values,  $r = .23, p < .05$ , and the less they agreed that they would vote for their significant others' political party,  $r = -.25, p < .05$ . The higher the participants' universalism score, the more importance they placed on politics,  $r = .29, p < .01$ . The higher the participants' tradition score, the more they agreed that they always vote with their political party,  $r = .23, p < .05$ , for the party their parents support,  $r = .31, p < .01$ , for the party their friends support,  $r = .41, p < .01$ , for the candidate with more experience,  $r = .40, p < .01$ , and for the candidate they see the most on television,  $r = .36, p < .01$ . Participants who reported higher security scores agreed that they always vote with their political party,  $r = .412, p < .01$ , they vote for the party that their parents support,  $r = .39, p < .01$ , and they vote for the party their friends support,  $r = .32, p < .01$ . In reference to personality, the higher the neuroticism score, the less participants agreed that

politics were important,  $r = -.27$ ,  $p < .05$ , and the less they planned to vote in future elections,  $r = -.23$ ,  $p < .05$ . Participants who reported higher power scores agreed that politics are important,  $r = .28$ ,  $p < .05$ . Participants who scored higher in extraversion agreed that they participate in all political elections,  $r = .25$ ,  $p < .05$ , and politics are important to them,  $r = .32$ ,  $p < .01$ . In comparison to people who had never voted in a U.S. election, voters were more likely to focus on the candidates, not the political party,  $t(78) = 2.18$ ,  $p < .05$ . In sum, values influenced young voters more than their personality, gender, age, or race, paralleling research in other countries.

## RACE, GENDER, AND MONEY MANAGEMENT PRACTICES OF YOUNG ADULTS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Brittney DeMonte, 2008**  
**Tabatha Bluford, 2008**  
**Narkeya White, 2008**  
**Lydia Hutto, 2008**

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

This study examined the relationships among gender, race, and money management in young adults, and added to the existing literature by assessing contentment with money management practices. Women were more likely to bounce a check than men,  $t(62) = -2.89$ ,  $p < .01$ , and less likely to agree that they paid their own bills,  $t(62) = 2.17$ ,  $p < .05$ . Men reported a higher monthly income,  $t(59) = 3.40$ ,  $p < .01$ , and saving more money per month,  $t(52) = 2.98$ ,  $p < .01$ . Men were more likely to report spending money frivolously on family,  $t(57) = 2.24$ ,  $p < .05$ , while women were more likely to report spending money frivolously on themselves,  $t(57) = -2.48$ ,  $p < .05$ . Caucasians agreed more than African-Americans that their bills got paid on time,  $t(56) = -2.34$ ,  $p < .05$ . African-Americans were more likely to agree that they gave financial donations to charity,  $t(59) = 2.81$ ,  $p < .01$ , and that they spent more than they earned,  $t(59) = 2.15$ ,  $p < .05$ . The older the participant, the more likely they were to report spending their money on bills,  $r = .27$ ,  $p < .05$ , and the less likely they were to spend money on entertainment,  $r = -.30$ ,  $p < .05$ . The more content participants were with the amount of money they had, the more important they thought it was to know their bank balance,  $r = .25$ ,  $p < .05$ , the better they thought they managed their money,  $r = .33$ ,  $p < .01$ , the more likely they were to keep track of their purchases,  $r = .37$ ,  $p < .01$ , and the more likely they were to pay their bills on time,  $r = .50$ ,  $p < .01$ . The more credit cards, the more likely the participants were to buy things they could not afford,  $r = .32$ ,  $p < .05$ , be in debt,  $r = .49$ ,  $p < .01$ , and think that money is a very stressful part of life,  $r = .32$ ,  $p < .01$ . These findings suggest specific patterns of vulnerability that can affect young adults' finances.

# INITIAL ATTRACTION IN INTERRACIAL, HOMOSEXUAL, AND TRADITIONAL RELATIONSHIPS

*Presented at the Southeastern Psychological Association Convention  
Charlotte, N.C., March 2008 and at NCUR 22, Salisbury, Md., April 2008*

**Elizabeth Burr, 2008**  
**Diane Brajkovich, 2008**

*Department of Psychology  
Faculty Mentor:  
Merry J. Sleigh, Ph.D.*

The purpose of the current study was to examine how people in different types of relationships choose partners. Participants were 37 men and 44 women, with a mean age of 19.7 (SD = 2.37). Participants were given a survey which assessed the importance participants placed on different characteristics when choosing a romantic partner. Participants also provided details about their behavior in romantic relationships. We compared adults in a homosexual relationship to those in a heterosexual relationship. Heterosexual participants reported higher self-esteem than homosexual participants,  $t(75) = 2.25, p < .05$ . Homosexual participants were more likely to agree that they usually love their partners more than their partners love them,  $t(74) = -2.74, p < .01$ , and that the relationship in mind was characterized by commitment,  $t(74) = -2.11, p < .05$ . Homosexual participants rated their partners' parental status as less important,  $t(71) = -2.19$ , their partners' religion as less important,  $t(71) = -2.67, p < .01$ , and their partners' personality as less important,  $t(71) = -2.14, p < .05$ . Homosexual participants rated their partners' occupation as more important,  $t(71) = 2.79, p < .01$ , and their partners' IQ as more important,  $t(71) = 2.66, p = .01$ . Homosexual participants reported feeling less comfortable showing physical affection in public,  $t(73) = 2.13, p < .05$ , and less comfortable bringing their partner around their family,  $t(73) = 2.51, p < .05$ . Heterosexual participants were more concerned with their family's opinions,  $t(73) = 3.86, p < .01$ , and were more likely to agree that their family approved of their relationship,  $t(73) = 5.07, p < .01$ , and were more likely to agree that society approved of their relationship,  $t(73) = 4.01, p < .01$ . We also compared participants in intraracial relationships to those in interracial relationships. Participants in interracial relationships rated themselves as more attractive,  $t(72) = -2.18, p < .05$ , and rated the marital status of their partner as a more important factor,  $t(68) = 2.03, p < .05$ . These findings suggest that factors that lead to initial attraction might be different for traditional versus non-traditional romantic partners.

# PROVIDING CAREER GUIDANCE AND ACADEMIC ADVISING: WHAT DO YOUNG PSYCHOLOGISTS WANT AND NEED?

*Presented at the National Institute on the Teaching of Psychology Conference  
St. Pete Beach, Fla., January 2008*

**Justine Rossi, 2007**  
*Department of Psychology  
Faculty Mentor:  
Merry J. Sleight, Ph.D.*

One responsibility of psychology teachers is to convey content material. Another responsibility is helping students understand their options within the field of psychology. We surveyed 75 undergraduates about their experiences with and expectations of academic and career guidance. Underclassmen were more likely to agree that they trusted their own opinions over their advisors; ironically, upper-class students felt that their advisors were responsible for making sure they graduated on time. Seniors were most likely to feel that their advisors cared about their personal issues, perhaps reflecting relationship length.

Students who scored high on entitlement believed that teachers should be willing to discuss the weaknesses of other teachers, should know everything about classes offered at the university, should meet anytime at the students' convenience, and should help students create a resume. Students with high self-esteem felt that their advisors should come up with a 4-year plan for them; however, they were less likely to seek their advisors' help with career related issues and more likely to trust their family over their advisor. Students sensitive to criticism reported trusting their friends over their advisors. Students reported the highest levels of satisfaction when their teachers met with them at length, talked about other teachers, made sure graduation requirements were met, knew student names, helped with career and personal issues, and gave specific advice. Satisfied students trusted their advisors more than they trusted friends and family. Satisfaction was also positively correlated with teachers being honest, even when the feedback was painful to hear. We found no gender differences, suggesting that personality and class standing may be more influential variables in determining the advising relationship.



# INFLUENCE OF NON-TRADITIONAL FACIAL PERCINGS AND GENDER ON PERCEPTION OF PROFESSORS

*Presented at the National Institute on the Teaching of Psychology Conference  
St. Pete Beach, Fla., January 2008*

**Brandon Blackwell, 2008**

**Morgane Dhers, 2008**

**Jennifer Norby, 2007**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleight, Ph.D.*

The growing popularity of non-traditional facial piercings has created a challenge for employers. Research has indicated that non-traditional facial piercings are overwhelmingly viewed negatively by human resource managers (Swanger, 2006) and by patients who are selecting a physician (Lill & Wilkinson, 2005). Our study examined how undergraduate students would perceive non-traditional facial piercings on college professors compared to professors who displayed no such piercings. Participants were 96 college students, with a mean age of 21.27 (SD = 1.88). Each participant was exposed to one of the following conditions: a man with non-traditional piercings, a man with no visible piercings, a woman with non-traditional piercings, or a woman with no visible piercings. Participants then completed a 45-question survey, which measured the students' beliefs about the professor's competency, trustworthiness, approachability, and other teaching-related characteristics. Results revealed that the participants rated the pierced woman as appearing more unprofessional than the non-pierced man and woman, and the pierced man as more unprofessional than the non-pierced man. The pierced man and woman's appearance were considered more distracting than the non-pierced man and woman. The non-pierced man was rated as more trustworthy compared to both the pierced man and the non-pierced woman. Additional findings showed a pattern of facial piercings negatively influencing students' perceptions of the teacher and students' expectations about their ability to learn. Gender also emerged as an important variable, with the pierced woman eliciting the most negative ratings. This information may be useful to psychology teachers who are interested in the image they project to students and how that image influences the student-teacher relationship.

# OXIDATIVE STRESS IN 3D CARDIAC TISSUE CULTURES

*Presented at NCUR 22, Salisbury, Md., April 2008 and Tri Beta Southeastern Regional Conference, Greenville, S.C., April, 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a Tri Beta Biological Honors Society Grant.*

**Shanequa D. Bryant, 2010**

**Shreya S. Acharekar, 2008**

*Department of Biology*

*Faculty Mentor:*

*Dwight Dimaculangan, Ph.D.*

During a myocardial infarction (MI), ischemia and hypoxia cause a loss of cardiac function through apoptosis and necrosis, which is further complicated by inflammation and an immunological response. To understand how cardiac tissue responds to injury independent of the in vivo complexities, a 3D cardiac tissue culture system was used to model a MI by exposing the cultures to hypoxia and hyperoxia. To determine if they mimic in vivo tissue, we measured the release and gene expression of inflammatory cytokines (IL-1, IL-6, and TNF-), myocyte cell death (cardiac troponin-I), and changes in gene expression among oxidative stress and hypoxia-induced genes. In our experiment, two sets of cardiac tubes matured at 21% oxygen (hyperoxic) and three sets matured at 6% oxygen (normoxic). One set, maintained at 21%, was then transferred to 6% oxygen. Two sets, previously maintained at 6%, were then challenged at 1.5% (hypoxic) for 3 and 10 hours. The troponin-I levels for the 21% tubes were significantly higher than the 6% tubes. Changes in gene expression among several cytokines (IL-6, IL-1, and TNF-), hypoxia induced genes (H11K and HIF-1), and oxidative stress genes (SOD1, NOX2, and NOX4) were assessed using Real-Time PCR. Preliminary findings show that the expression levels of IL-6 and TNF- $\alpha$  were higher in the 21% tubes than in the 6% tubes, while the expression levels of HIF-1, IL-1, and NOX2 were higher in the 6% tubes than in the 21% tubes. H11K, SOD1, and NOX4 expression levels were significantly higher in the 21% tubes than 6%. Overall, the results indicate that different cellular pathways are associated with the oxidative stress under hypoxia as compared to the stress associated with hyperoxia.

# RACE, COMMON SENSITIVITY, AND ATTITUDES TOWARDS DISABILITIES WITH VARYING VISIBILITY

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Sarah Tumlin, 2008**

**Samantha Martin, 2008**

A disability is a physical or mental impairment that limits a person's ability to perform major life tasks. Disabilities can be either visible, such as mental retardation, or invisible,

**Laura Tyner, 2008**

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such as heart disease (Hunt & Hunt, 2004). The current study examined the relationships among race, sensitivity to criticism, gender, and young adults' attitudes towards people with a visible or invisible disability. Participants were 89 young adults, with a mean age of 20.46 (SD = 2.53). Participants were given the Attitudes Towards Disabled Persons Scale (Yueger & Block, 1986), a sensitivity to criticism scale (Rosenberg, 1965), and demographic questions. Two versions of the survey were created. The first primed participants to consider visible disabilities by listing several visible disabilities as part of the instructions. The second version primed participants to consider invisible disabilities in the same manner. Results revealed that young adults had more supportive attitudes toward individuals with invisible disabilities compared to visible disabilities,  $t(79) = .78, p < .05$ . We compared participants who had no family members with a disability, a family member with a physical disability, or a family member with a mental disability. Participants with physically disabled family members had more positive attitudes toward disabilities than did participants who had no disabled family members,  $F(3, 85) = 4.30, p < .05$ . The less experience participants had with disabled individuals, the more uncomfortable they reported feeling about taking the survey,  $r = -.32, p < .01$ . Women were more sensitive to criticism than were men,  $t(87) = -2.85, p < .01$ ; however, gender and sensitivity to criticism did not relate to attitudes toward disabled individuals. Age, race and GPA did not predict attitudes toward disabled individuals. Our results reveal that young adults are more accepting of invisible compared to visible disabilities, and acceptance is higher if the young adult has family experience with disabilities. Individuals' characteristics, such as sensitivity to criticism, gender, age, and race were not influential in determining attitude toward disabilities. These findings suggest that exposure to disabilities, either through personal contact or visibility, may be the key to increased acceptance of disabled individuals.

## RELIGION, RACE, AND ATTITUDES TOWARDS RACIAL PROFILING

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Maria Schmelzer, 2008**

**Ashlie L. Harder, 2008**

*Department of Psychology*

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Our goal was to expand on the previous literature, and perhaps resolve some of the contradictions, by investigating young adults attitudes toward ethnic minority groups, racial profiling, and Islam. Participants were given a 39 question survey. Portions of the survey were taken from previous research and assessed support for the U.S. Islamic community, anxiety towards terrorism, understanding of the Muslim religion, importance of religion, and attitudes on racial profiling (Butz, Plant, & Doerr, 2007; Kim, 2004). The survey also included questions to assess political stance. Results revealed a negative correlation between support for Islam and anxiety towards terrorism and Muslims. Increased knowl-

edge of Islam was associated with more support for Islam. Participants who reported being more religious were less supportive of Islam. Republicans and Democrats could not be differentiated; however, Republicans were less supportive of Islam than were Independents. These findings suggest that Americans can reduce their anxiety about Islam by increasing their understanding of the religion.

## THE INFLUENCE OF PARENTS' AND FRIENDS' BELIEFS ON YOUNG ADULTS' PERCEPTIONS OF HIV/AIDS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Shante Brown, 2008**

*Department of Psychology*

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*Darren R. Ritzer, Ph.D.*

This study examined how the beliefs of parents and friends influence young adults' perception of HIV/AIDS. Sixty-four college students completed an Attitudes and Beliefs Rating Scale Toward Students with HIV/AIDS (Stinnett, Cruce, & Choate, 2004), questions on general knowledge regarding transmission of HIV/AIDS (Boone, et al., 2003), and questions to assess beliefs of parents and friends. One version of the survey began by describing a person infected with HIV as a result of a dishonest partner. A second version described the infection as resulting from injection drug use. We created a friends and family approval (FFA) score, with a higher score indicating that the participants' friends and family were more accepting of people with HIV/AIDS. We also computed a personal approval (PA) score. Results revealed a positive correlation between the FFA score and PA score, indicating that participants shared similar beliefs as their friends and family,  $r = .54, p < .01$ . Compared to participants who reported no prior contact, participants who had previous contact with a person infected with HIV/AIDS reported more accepting attitudes,  $t(60) = 2.93, p < .01$ . Age, race, sexual orientation, and GPA did not relate to PA or FFA scores. In contrast, African-Americans were more likely than Caucasians to admire an individual with HIV/AIDS "sticking it out" in school,  $t(58) = -2.55, p < .05$ . Men agreed more than women that individuals with HIV/AIDS should only attend classes in restricted areas,  $t(61) = 2.63, p < .05$ , and should not be allowed to participate in activities requiring physical contact,  $t(60) = 2.0, p = .05$ . Women were more likely to believe that the infected individual's condition was under his/her control,  $t(60) = -3.24, p < .01$ . There was a trend for participants to blame the IV drug user for their condition in comparison to the individual infected by a dishonest partner; however, this difference only approached significance,  $t(61) = -1.98, p = .053$ . These findings suggest that friends and parents are influential in determining young adults' attitudes toward HIV/AIDS. Exposure to acquaintances with HIV/AIDS led to improved attitudes toward infected individuals.

# TRADITIONAL AND NON-TRADITIONAL GENDER ROLES PORTRAYED IN CHILDREN'S LITERATURE

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Tracy Morton, 2008**  
*Department of Psychology*  
*Faculty Mentor:*  
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The current study is an attempt to assess if gender role depictions in children's picture books have changed over the past 20 years. Children's picture books were chosen from the International Children's Digital Library website. Male and female characters were recorded in terms of occupation, housework engagement, caretaker behavior, and aggressive behaviors. Traditional male roles included playing sports, being a police or firefighter, using tools, administering discipline and fighting. Traditional female roles included doing housework, being a teacher or nurse, and nurturing children. A total of 57 pre-1987 and 60 post-1987 books were used. Multiple raters recorded characters in traditional roles (men in male roles and women in female roles) or in non-traditional roles (men in female roles and women in male roles). Pre-1987 children's books contained significantly more traditional gender roles than post-1987 children's books,  $t(115) = 2.20, p < .05$ . There was no significant difference between non-traditional role depiction pre- and post-1987,  $t(115) = .044, p > .05$ . Overall, the chosen books had an average of 17.67 (13.74 s.d.) traditional gender role depictions while having an average of 3.27 (3.73 s.d.) non traditional gender role depictions,  $t(117) = 11.06, p < .01$ . In the last 20 years, children's books seem to present fewer traditional gender role depictions. Given the importance of children's picture books as a source of gender role information, the decrease in traditional gender role portrayals may reflect the changing view of gender roles in society. However, there has not been an associated increase in non-traditional gender role depictions. Both pre- and post-1987 children's books contained very few non-traditional gender role depictions. Rather than presenting "new" views of gender roles, children's books seem to present less "traditional" views.

# PSYCHOLOGICAL WELL-BEING, COPING STRATEGIES, AND PHYSICAL HEALTH SYMPTOMS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Brittney DeMonte, 2008**  
**Lydia Hutto, 2008**

This study examined the relationships among stress levels, coping strategies, and physical health. In addition, the current study added to the existing literature by specifically assessing the use of religion as a coping strategy. Participants were 300 undergraduate

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students. Participants completed a psychological well-being/stress scale (Goldberg, 1972) and scales developed at the Walter Reed Army Institute of Research to measure coping strategies and physical health symptoms (Halverson, R., Bliese, P., Moore, R., & Castro, C., 1995). Stress level was positively related to number of physical health symptoms,  $r = .44, p < .01$ . Avoidance coping strategies were associated with higher levels of stress,  $r = .37, p < .01$  and more physical health symptoms,  $r = .33, p < .01$ . Active coping strategies were negatively related to stress level,  $r = -.25, p < .01$ . Religious coping was not related to stress level or physical health symptoms. The higher the participant's GPA, the less likely they were to use avoidance coping,  $r = -.21, p < .01$ . However, GPA did not predict use of active coping strategies. In comparison to men, female students reported more use of religious coping,  $t(298) = 4.27, p < .01$ , higher stress,  $t(298) = 3.02, p < .01$ , and more physical health symptoms,  $t(298) = 4.83, p < .01$ . Psychology majors also used religious coping more than other majors combined,  $t(293) = -2.08, p < .05$ , but did not show differences in stress levels or physical symptoms. There was a trend for juniors to report less stress than freshmen, sophomores, and seniors; however, this difference only approached significance,  $F(3, 294) = 2.60, p = .052$ . Results supported previous findings that negative outcomes are associated with avoidance coping and positive outcomes are associated with active coping strategies. Active coping strategies, such as looking for information about possible choices and exercise, appear to be effective buffers of stress. Gender, class status, and major did not predict the use of active versus avoidant coping. Women and psychology majors were likely to use religious coping strategies; however, this coping strategy did not relate to decreased stress or improved health.

## PROSOCIAL BEHAVIOR: THE PREDICTIVE ABILITY OF HELPING BEHAVIOR ON CIVIL COURAGE

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Felicia Fricke, 2008**

*Department of Psychology*  
*Faculty Mentor:*  
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The purpose of the present study was to further explore the relationship between two types of prosocial behavior. Helping behavior occurs when an actor provides a favor, and civil courage occurs when an actor exhibits bravery or courageous behavior (Greitemeyer et al, 2006). Participants were 60 young adults with a mean age of 20.36 (SD = 5.04). Two vignettes were used in which a person acted prosocially (Greitemeyer et al, 2006). Each participant received one scenario with high expected negative social consequences for one actor and low expected negative social consequences for the other actor. Participants then answered a brief survey about their perceptions of prosocial behavior, willingness to intervene in the situation, and demographics. A positive correlation was found between helping behavior and civil courage,  $r = .40, p < .01$ . Participants who were willing to help were also more willing to engage in courageous

behaviors. Age and GPA did not predict helping behavior or civil courage. The more participants agreed that they had been in the same situation as the victim, the lower their civil courage score,  $r = -.27, p < .05$ . An ANOVA assessed the effects of gender and order of situation (high or low negative consequence) on helping behavior and civil courage. There was no interaction and no main effect for the order of the situations; however, men were more likely than women to exhibit helping behavior,  $F(1, 46) = 10.70, p < .05$ , but not more likely to exhibit civil courage. Similarly, men were more likely to intervene in a situation involving two boys,  $t(58) = 3.02, p < .01$ , and were more likely to agree that they had been in a similar situation as the victim who was described as being in a physical altercation,  $t(58) = 2.07, p < .05$ , compared to women. This study provides evidence that prosocial behavior can be influenced by gender and identification with the victim. We also found that adults who are willing to help in a minor way, such as offering a favor, were more likely to report that they would perform courageous acts on behalf of others.

## RELATIONSHIPS AMONG BIRTH ORDER, SIBLING RIVALRY, ACHIEVEMENT, AND SOCIALIZATION

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Kathryn Carr, 2008**  
**Jessica Patterson, 2008**  
**Rebecca Neese, 2008**

*Department of Psychology*  
*Faculty Mentor:*  
*Darren R. Ritzer, Ph.D.*

This study assessed sibling rivalry, achievement, and family labels attributed to oldest, middle, youngest, and only children. Participants were 78 young adults, with a mean age of 19.9 (SD = 2.21. An ANOVA) on birth order revealed that sibling rivalry was higher for middle children than for youngest or oldest children,  $F(2, 61) = 10.85, p < .05$ . Oldest children were more likely than younger children to wish they were an only child,  $F(2,62) = 3.61, p < .05$ . Sibling rivalry was positively correlated with being teased by siblings,  $r = .39, p < .01$ , teasing siblings,  $r = .48, p < .01$ , and physical altercations with siblings,  $r = .53, p < .01$ . The less attention mother paid to participants relative to their siblings, the greater the sibling rivalry,  $r = .48, p < .01$ . Age was not correlated with sibling rivalry.

Men reported lying more often to aid a sibling in comparison to women,  $t(64) = 2.06, p < .05$ , while women were more likely to desire success for their siblings,  $t(63) = -2.36, p < .05$ . There were no differences in participants' GPA based on birth order,  $F(3, 65) = 1.07, p > .05$ . When asked to assign labels, oldest children were most likely to be labeled as "best student" while youngest children were most likely to be labeled "the problem child." Oldest children were most likely to be labeled as "most likely to do things with" and "most jealous of." Youngest children were most likely to be labeled as "most popular among peers" and "most outgoing." There was no child who was most favored by father; however, youngest children were most likely to be labeled as "most favored by mother." These findings suggest that middle children experience the highest levels of sibling rivalry, an issue not addressed in previous research. The results also indicate that environmental factors,

such as negative sibling interactions, are more predictive of sibling rivalry than are individual characteristics, such as age, race, and gender. Children's relationships with their mothers appear to be more influential than relationships with their fathers.

## LIFE SATISFACTION, SELF-ESTEEM, AND ADDITIONAL FACTORS IN COLLEGE ATTENDANCE

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Julia Brown, 2009**

**April Osburn, 2009**

*Department of Psychology*

*Faculty Mentor:*

*Darren R. Ritzer, Ph.D.*

This study examined which factors were most important in a student's decision to enroll in college, along with how these factors related to self-esteem and life satisfaction. Participants were 70 college students, with a mean age of 19.72 (SD = 2.35). Participants reported their greatest motivation to attend college being their attitude toward their institution, followed by peer/family influence, career aspirations, and independence or recreational reasons. The least influential reason was family attendance at the specified institution. In comparison to men, women's decision to attend college was more influenced by peers and family,  $t(68) = -2.63, p < .05$ . There were no differences between Caucasians and African-Americans on reasons to attend college. Similarly, the family's income level did not predict a student's reasons for enrollment. The older the student, the less likely the individual was to attend college because of peer/family pressure,  $r = -.30, p < .05$ , or for career aspirations,  $r = -.33, p < .01$ . The higher the parents' education level, the more students reported being influenced to attend college by peers and family,  $r = .31, p < .01$ . The lower the self-esteem, the more likely participants were to attend college for career aspirations,  $r = -.24, p < .05$ . The more participants reported attending college for independence or recreational reasons, the more likely they were to report enrolling for career aspirations,  $r = .32, p < .01$ . Participants who chose to attend college because of positive attitudes toward their specific institution reported higher life satisfaction scores,  $r = .29, p < .05$ . There was no significant correlation between academic performance and self-esteem, or between academic performance and life satisfaction. These results indicate that attitudes toward a specific institution and peer or family pressure were most influential in a student's decision to attend college. Having a positive attitude toward their college of choice was related to increased life satisfaction. Academic performance was not related to life satisfaction or self-esteem. Taken together, these findings suggest that the local college environment of an individual may be more influential than the individual's academic behavior in determining overall satisfaction.



# OVERCONFIDENCE AND PAST ACADEMIC PRIMING

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Grace Kennington, 2008**  
**Justin Anderson, 2008**

*Department of Psychology*

*Faculty Mentor:*

*Darren R. Ritzer, Ph.D.*

Research has shown that people believe themselves to be better than others, especially in relation to outcomes that are under their control (Moore & Cain, 2005). This belief is called overconfidence. The current study examined the relationship between early academic feedback and young adults' tendency for overconfidence. Participants were given a 20 question quiz, comprised of randomly selected trivia questions. Following the quiz, participants were given the Confidence Judgment Scale (Puncochar & Fox, 2004), asking them to indicate how confident they felt about the accuracy of their answers on a scale from 0% to 100% (confidence rating). Participants also indicated how confident they felt when comparing themselves to other students who took the quiz (comparative confidence rating). The current study showed no relationship between participants' confidence levels and their involvement in past advanced placement classes. Standardized test scores predicted confidence levels, suggesting that academic feedback may have an influence on individual's tendency toward overconfidence. Despite receiving similar feedback from others, men reported themselves to be more intelligent than women. Although their performance was equal, Caucasian students felt more confident when comparing themselves to their peers. Overconfidence creates problems in courtrooms, hospitals, and business environments (Puncochar & Fox, 2004). The current study suggests that overconfidence may exist in the educational arena as well, and that men and Caucasians may be more vulnerable to it.

# EVIDENCE OF SITUATION-SPECIFIC GENDER BIAS IN THE WORKPLACE

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Whitney Simmons, 2008**  
**Alyssa Burgess, 2008**  
**Erin Griffin, 2007**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleight, Ph.D.*

The purpose of the current study was to investigate how young adults assigned blame to male and female employees, and how the rank of the employee influenced those attributions of blame. Participants were 100 young adults, with a mean age of 21.0 (SD = 4.17). Sixty percent were employed. We created ten vignettes, describing an employee causing a problem in the workplace. After each vignette, participants were asked to rate how damaging the action was for the company, how responsible the employee was, how much they would enjoy working with the employee, and how often this situation occurs in the real

world. The vignettes were counterbalanced so that each one was presented to different groups of participants as describing a male manager, female manager, male employee, or female employee. On most scenarios, young adults did not demonstrate gender bias. When bias was revealed, the scenario dictated the direction of that bias. Male managers were considered most disliked following an inappropriate sexual liaison, suggesting that participants may be wary of an abuse of power. In contrast, when women were assigned blame, their actions were considered damaging. Women were considered more damaging than men when preoccupied with personal issues. Inappropriate photos of a female manager were considered more damaging to the company than the same photos of a male employee. Perhaps participants perceived women to have a greater potential for work-family conflict. These findings may be useful to employees and employers who are interested in minimizing gender bias in the workplace.

## DIFFERENCES IN EMOTIONALITY AND USE OF MUSIC AS A COPING STRATEGY

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Wayne Maury, 2008**  
**Kate McDonnell, 2008**  
**Ana LaPrad, 2008**

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

This study focused on how much influence music has on mood and how music is used to deal with different emotions. Participants were 62 young adults with a mean age of 19 (SD=1.32). The survey assessed participants' tastes in music and participants' tendency to listen to music when they experienced certain emotions. Results revealed that women were more likely to agree that they listen to music when they are under pressure compared to men,  $t(60)=-2.73, p < .01$ . There were no other significant gender differences related to the use of music. African Americans reported being more likely to listen to music when they are angry,  $t(54)=-2.66, p=.01$ , happy,  $t(54)=-2.12, p < .05$ , and depressed,  $t(54)=-2.62, p < .05$ . Caucasians reported being more likely to listen to music when they are anxious,  $t(54)=2.66, p < .05$ . African Americans reported listening to music more hours per week than did Caucasians,  $t(51)=-2.36, p < .05$ . The higher the participants' grade point average (GPA), the less they listen to music when stressed,  $r = -.28, p < .05$ . The higher the participants' GPA, the more time they spent alone,  $r = -.30, p < .05$ . There were no other significant correlations with GPA. The results indicate that music can be a coping strategy for dealing with emotions. This information could be useful to counselors, teachers, or anyone else who is interested in studying the effects of music on mood.

# OBSERVING ZINC-INDUCED ASSOCIATION OF ALZHEIMER'S AMYLOID-BETA PEPTIDE, ONE OLIGOMER AT A TIME

*Presented at NCUR 22, Salisbury, Md., April 2008*

*Supported by a Winthrop University Research Council Grant*

**Cassie Rodenberg, 2009**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*Robbin Lammi, Ph.D.*

Amyloid-beta peptide (Abeta), a protein of 39-43 amino acids, is widely recognized as the pathogenic species in Alzheimer's disease. Its self-association results in the formation of a diverse array of toxic oligomers that are implicated in Alzheimer's neurodegeneration. Metal binding is one of the many factors shown to promote Abeta aggregation. We are examining Abeta oligomerization in the presence and absence of zinc by single-molecule fluorescence spectroscopy. Fluorescently labeled Abeta(1-40) peptides in solution at physiological pH (picomolar concentrations) are tethered to functionalized cover slips and interrogated, one at a time, by laser excitation. The extent of peptide oligomerization is categorized by fluorescence intensity data. Oligomers exhibit time-dependent downward stair-step patterns in their fluorescence intensities: sharp decreases in intensity occur as individual dyes undergo irreversible photobleaching (photochemical reactions). The number of dye-labeled peptides in each oligomer is easily determined from the number of intensity levels it exhibits. Our results show that fresh samples of Abeta form mainly monomers and dimers, and little aggregation occurs as a factor of time alone. In contrast, addition of Zn(II) to the fluorescently labeled peptide (4 Zn : 1 Abeta) results in rapid association: samples contain many larger oligomers, including tetramers and pentamers, with trimers most prevalent. Upon addition of the zinc chelator clioquinol, the sample distribution shifts toward smaller species, primarily dimers and a few trimers. Aging of chelator-containing samples further reverses aggregation, leaving predominantly monomers and dimers in solution. These results are consistent with published work on Abeta(1-40) and demonstrate the power of single-molecule spectroscopy for probing initial events in Abeta association. Future studies with clioquinol will focus on examining oligomer stability.

# MELATONIN ALTERS FISSIONING RATE IN STENOSTOMUM VIRGINIANUM (PLATYHELMINTHES, CATENULIDA)

*Presented at the ABS Meeting on April 17, 2008 and the Tri Beta Southeastern Regional Conference,  
Greenville, S.C., April 2008*

**Daniel Stanton, 2009**

*Department of Biology*

*Faculty Mentor:*

*Julian P. S. Smith III, Ph.D.*

Melatonin, although best known as a “Zeitgeber” in vertebrate chronobiology, also affects biological activity in organisms ranging from unicells to humans. In triclad flatworms, melatonin levels have been shown to vary in a circadian fashion (peaking in darkness), and it has been shown that continuous melatonin treatment inhibits asexual fission in at least two triclad species. Accordingly, it might be expected that melatonin would have similar effects in other members of the Phylum Platyhelminthes. *Stenostomum virginianum* Nuttycombe is a common freshwater catenulid flatworm that reproduces prolifically by paratomic fission under laboratory culture conditions. *S. virginianum* were exposed to melatonin for 8 days at concentrations ranging from 1mM to 0.001mM in conditions of continuous darkness (worms were briefly exposed to light daily during feeding). We found that there was a statistically significant suppression of fissioning rate (as compared to control) by 0.1mM melatonin and by 0.01mM melatonin ( $p < 0.05$  in both). Treatment with 0.001 mM melatonin did not affect fissioning rate, and treatment with 1mM melatonin was lethal by day six. No significant effect on the number of fission planes/per worm was observed in any of the treatments, suggesting that melatonin may exert its effects on the net production of new cells, rather than on morphogenetic processes. At present, it is unclear whether melatonin acts in *S. virginianum* primarily by down-regulating cell-cycle progression or by up-regulating apoptosis (or by a combination of the two), as both effects are observed in different mammalian tissue-culture systems.

# A GRAIN OF TRUTH? : EXPLORING PERCEPTIONS AND STEREOTYPES OF COLLEGE STUDENT’S COMMITMENT TO CLASSWORK

*Presented at the Carolina Undergraduate Social Sciences Symposium, Charleston, S.C., April 2008*

**Jennifer Story, 2008**

With movies such as *Animal House* and *American Pie II* promoting college life as one

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and Anthropology  
Faculty Mentor:  
Jeannie Weil, Ph.D.*

big party, many people in the United States believe that college students are not taking their academic careers seriously. Through the use of a focus group and a survey distributed to students at a medium-sized, state-funded university, I employ facets of labeling theory to explore whether this perception of academic laziness holds true with college students themselves and whether age, gender, race and media consumption play a role in those beliefs. With universities across the country attempting to discover why some students struggle in the university setting, exploring how these stereotypes affect students can be an invaluable tool in helping students adjust better to college life. The focus group responses seemed to mirror many of the negative stereotypes portrayed in the media while the survey seemed to show college students have a more positive perception about their fellow student's commitment to school work.

## ADIPONECTIN MEMBRANE RECEPTOR 1 AND 2

*Presented at the Annual Meeting of the American Society for Biochemistry and Molecular Biology  
San Diego, Calif., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE*

**Katie Faile, 2008**  
**Alena James, 2008**

*Department of Chemistry,  
Physics and Geology  
Faculty Mentor:  
Chasta Parker, Ph.D.*

Metabolic syndrome is used to describe various health risk factors that can lead to obesity, Diabetes type 2, and cardiovascular disease. Adipose tissue plays a key role in metabolic syndrome in that it secretes many hormones and other metabolically functional molecules. One such hormone is Adiponectin (Acrp30), a 30 kDa protein hormone essential to the mediation of lipid and glucose metabolism. It has been shown that decreased levels of Acrp30 induce a higher risk for individuals to develop obesity, diabetes, and cardiovascular disease. Research on the structure and function of Acrp30 serves as an initial step in the development of novel treatment methods for obesity-associated and vascular disorders. To complete these studies, a more in-depth analysis of Acrp30's membrane receptors, AdipoR1 and AdipoR2, is needed. The purpose of this study is to produce high yields of recombinant Human AdipoR1 and AdipoR2 using *Spodoptera frugiperda* (Sf9) insect cells. Using Novagen's Insect Direct system, AdipoR1 or AdipoR2 was transiently transfected into the Sf9 cells. The cells were then harvested and the receptors extracted using Pierce's Mem-Per Extraction Kit. Both receptors have been successfully expressed and functionally purified.

# KINETIC CHARACTERIZATION OF ARYLAMINE N-ACETYLTRANSFERASE 2

*Presented at the Annual Meeting of the American Society for Biochemistry and Molecular Biology*

*San Diego, Calif., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE*

**Inesha Baker, 2008;**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentors:*

*Chasta Parker, Ph.D.*

*Jason Hurlbert, Ph.D.*

N-acetyltransferase 2 (NAT 2) is an enzyme that catalyzes the acetylation of harmful arylamines and has been implicated in various types of cancer. NAT 2 is primarily expressed in the hepatic system and intestinal epithelium and is encoded at two polymorphic loci that give the phenotypic characteristics of slow and fast acetylation. The purpose of this experiment was to study the stability of the NAT 2 over time in order to determine if rate data was affected by a time lapse between purification and rate determination. The NAT 2 gene was amplified from both pENTR 221 and genomic DNA using PCR. NAT 2 was ligated into a pET28b+ vector containing an N-terminal hexahistidine tag and transformed into E. coli Rosetta 2 cells. Protein expression was carried out under different conditions to determine the correct culture and IPTG concentrations necessary for protein production. The protein was isolated from the cells and purified using FPLC. The enzyme was then kinetically characterized using sulfamethazine and aspartame immediately after purification as well as one week post - purification. Preliminary results indicate that a one week time lapse results in a 2 to 4 fold decrease in the activity.

## ADIPONECTIN MEMBRANE RECEPTORS: ADIPOR1 AND ADIPOR2

*Presented at the South Carolina Academy of Sciences, March 2008 and NCUR 22, Salisbury, Md., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a*

*Winthrop University Research Council Grant*

*Awarded the Sigma Xi/SCAS award for Outstanding Undergraduate Research and the AAAS Award for Most Outstanding Female Scientist*

**Alena James, 2008**

**Katie Faile, 2008**

Metabolic syndrome is a set of risk factors that cause individuals to develop obesity, type 2 diabetes, and cardiovascular diseases. Metabolic syndrome correlates with decreased serum levels of the protein hormone adiponectin. In transgenic mice, reduced levels of

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adiponectin signify glucose intolerance, insulin resistance and increased adiposity. Two recently identified receptors for Adiponectin are AdipoR1 and AdipoR2. The receptors are 66% homologous and belong to the PAQR protein family. The purpose of this study was to produce recombinant Human AdipoR1 and AdipoR2 in *Spodopetra frugiperda* (Sf9) cells in order to produce large quantities of the protein for structural characterization. To optimally express the receptors, experiments were performed to: 1) Determine the integrity of AdipoR1 and AdipoR2 plasmids. 2) Determine optimal transfection conditions and 3) Determine the most efficient protein extraction method. The integrity of the plasmids was verified by restriction digest analysis and DNA sequencing. Optimal transfection conditions showed that the most effective level of Insect GeneJuice (Novagen) to use was 5 µl GeneJuice/ µg DNA in 6 well plates. Two protein extraction techniques were used to isolate AdipoR1 and AdipoR2 from the hydrophilic proteins in the cell, the Pierce Mem-Per™ Eukaryotic Membrane Protein Extraction Reagent Kit appears to be the best for these particular proteins.

## **CIVIL RIGHTS OR RADICAL IDEALISM IN THE 1960'S; SOCIAL HISTORIANS ANALYZE THE BLACK POWER MOVEMENT**

*Presented at the Phi Alpha Theta Regional Carolinas Conference, Pembroke, N.C., March 2008*

### **Rodney Hamright, 2008**

*Department of History  
Faculty Mentor:  
Rory T. Cornish, Ph.D.*

Historians trace the origins of the Black Power Movement to Stokely Carmichael's defiant declaration during the 1966 Meredith March. However, the concept of Black Power was not new and if misunderstood at the time, it has increasingly been seen as a watershed in White/ Black relationships in this country. This paper investigated the recent research into the movement, exploring the issues beyond the iconic clenched fist symbol and commented upon how American has come to grips with its racist past. The paper reviewed some of the more important social historians and their conclusions about the movement, including Floyd Barbour, Patricia Collins, Baker Morten and Kevern Verey.

# THE HOLTZENDORFF MEMORANDUM AND THE ENTRY OF THE UNITED STATES INTO THE FIRST WORLD WAR, 1917

*Presented at the Phi Alpha Theta Regional Carolinas Conference, Pembroke, N.C., March 2008*

**Courtney Garrison, 2009**

*Department of History*

*Faculty Mentor:*

*Rory T. Cornish, Ph.D.*

By 1917, the only major world power not involved in the Great War was the USA, and this paper explored the forces that eventually drove President Wilson to send a war message to Congress in April 1917. It investigated both the long and short term causes of American entry into the War, and developed the thesis that German actions, especially the decisions at Pless Castle in January 1917, left President Wilson with little choice about declaring war. The paper reviewed the plan and timetable presented to the Kaiser by Admiral Holtzendorff, and linked this gamble to the Zimmerman Telegram. Paradoxically, the paper concluded, the German gamble for final total victory on the Western Front led to her defeat.

# THANK GOD FOR OUR FANS: THE CULTURE OF AMERICAN FOOTBALL FANDOM

*Presented at the MAASA/GLASA Conference, Rochester, N.Y., April 2008*

**Jeff Saunders, 2008**

*Department of Sociology*

*and Anthropology*

*Faculty Mentor:*

*Sarah Quick, M.A.*

This paper explores the micro-culture of American football fans through the eyes of football fans themselves. Several consultants in their early twenties are the primary research base. The main question posed is what constitutes a “real fan,” and the effects of age, gender, and socioeconomic background on an individual’s perception of them self as a “real fan.” These fans represent teams which have not won a championship in over five years if at all. What keeps these fans from abandoning lackluster teams for ones that have better players or more impressive records? The answer, as the paper argues, is in the fans perception of what it means to be a true fan, able and willing to stick out hard times when other non-real fans abandon ship. Also, special attention is paid to the time period between football seasons, the off-season and fan followings even when there is no game to attend. The research leads to the conclusion that the dedication of football fans transcends normal conceptions of what a team means. A football team is embodied not just by the players on the field but by the fans in the stands. It is also revealed that it is much



easier for a player to change teams than a fan. Fans are reevaluated as the most important element in sporting culture and play.

## SOCIAL STRUCTURE OF A CAPTIVE HAMADRYAS BABOON (PAPIO HAMADRYAS) GROUP

*Presented at NCUR 22, Salisbury, Md., April 2008*

**Stefanie J. Webb, 2008**

*Department of Biology*

*Faculty Mentor:*

*Janice Chism, Ph.D.*

This study focuses on the process of group formation in hamadryas baboons (*Papio hamadryas*) within a zoo setting at Riverbanks Zoo and Garden in Columbia, South Carolina. A new group of baboons was formed by the addition of two females, ages 9 and 5 years old, and one 5 year old male to a previously existing group of one 27 year old male, and one 25 year old female. Wild hamadryas baboons are a fission-fusion species meaning that a large group will split into a number of smaller groups. These smaller groups, known as one-male units (OMUs), consist of one male and several females. Adolescent males may follow OMUs until reaching maturity and establishing an OMU of their own. This study seeks to determine whether all five animals over time will remain one group, with one leader male, one follower male, and all three females, or whether they will form two one-male units with females being split between males. Data is being collected through ten minute focal animal samples of each individual and instantaneous scan samples of the entire group taken every twenty minutes. These samples provide data on frequency and intensity of associations. Associations are broken into several behavioral categories based on behaviors described by Kummer (1995). Behavioral categories of greatest interest to this study are ones pertaining to dominance, submission, and aggressive behaviors. The associations and behavioral categories to which they belong determine whether a single group or two OMUs have formed.

# KATE CHOPIN'S THE AWAKENING: READING BEYOND MODERN FEMINISM

*Presented at the Winthrop University English Department Graduate and Undergraduate Conference,  
Rock Hill, S.C., February 2008*

**Christina Williams, 2008**

*Department of English  
Faculty Mentor:  
Kelly Richardson, Ph.D.*

Although Kate Chopin published *The Awakening* in 1899, her text did not gain popularity within the American literary canon until the late 1900s, corresponding with the rise of feminist criticism as a mode of literary discourse. As a result, *The Awakening* is often labeled as an early feminist novel. Any text devoted to the exploration of women in a repressive society cannot avoid feminist threads, but this paper asserts that *The Awakening* is not an exclusively feminist novel in the modern sense. The novella is feminist because it is written by a female author and focuses on a female character, but Edna Pontellier is not the feminist heroine some modern scholars assume. Edna may be disruptive to her society, but she never moves beyond the patriarchal constructs that seem to dominate the concern of modern feminism. Instead, investigation into the associations of gender, naturalism, and imagery suggests that the novel is a study of identity beyond gender and illustrates naturalistic motifs that better define the novel. At the outset and initial introduction of Edna's character, the reader is already aware that Edna is not really confined by her sex, and this characterization is due in large part to the cultural setting of the novel. Furthermore, while Edna's femininity is objectified by the male gaze, she in contrast objectifies men with the same reliance on visual perception, nullifying the feminine with the masculine, creating an anomalous gender role. Chopin further establishes Edna as a gender anomaly by comparing her undiscovered individualism against feminine stereotypes throughout the novella. Finally, Edna's passivity in her awakening attests to a naturalist motif, making the text difficult to label as a feminist novel. If she is unaware and inactive in her awakening, a feminist agenda has little place in the novel because Edna's transformation is merely the consequence of nature and not of her own desire to usurp patriarchal constructs of society. In fact, men frame her sexual awakening. The importance of imagery also reveals a novel centered less on feminism and more on the discovery of sensuality and the self beyond gender constructs.

# PARENTAL ATTACHMENT, FAMILIAL MODELING, AND YOUNG ADULTS' CURRENT SMOKING BEHAVIORS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Victoria Charles, 2008**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleight, Ph.D.*

The purpose of this study was to examine how familial modeling and parental attachment may affect adolescent and young adults' smoking behaviors. Participants were 102 men and women, representing both smokers and nonsmokers, recruited from undergraduate classrooms. Participants were asked to complete a 55 item questionnaire to evaluate parental attachment (Kenny, 1995), and past and current smoking habits of participants and their families. For parental attachment, the more cigarettes the participants' mother smoked, the lower the Support score,  $r = -.44$ ,  $p < .05$ . The more participants reported wanting to quit smoking, the higher the Affective Score,  $r = .32$ ,  $p < .01$  and the higher the Support score,  $r = .32$ ,  $p < .01$ . The higher the Affective score, the fewer older sisters participants had who smoked,  $r = -.33$ ,  $p < .01$ . For familial modeling, the less the participants' mothers smoked, the more participants reported wanting to quit smoking,  $r = -.56$ ,  $p < .05$ . In addition, the less the participants' mothers smoked, the higher their GPA was,  $r = -.60$ ,  $p < .05$ . The fewer older brothers participants had who smoked, the more they reported wanting to quit smoking,  $r = -.32$ ,  $p < .05$ . The more participants reported wanting to quit smoking, the more they reported enjoying smoking,  $r = .53$ ,  $p < .01$ , but the less they wanted to date a smoker,  $r = -.39$ ,  $p < .01$ . Smokers reported having more siblings than nonsmokers,  $t(99) = -2.28$ ,  $p < .05$  and also that they felt more comfortable dating a smoker,  $t(98) = 3.19$ ,  $p < .01$ . Participants who reported participation in a free or reduced cost lunch program in high school had more older sisters who smoked,  $t(65) = 2.04$ ,  $p < .05$ . Compared to Caucasians, African Americans were more likely to agree that they would like to quit smoking,  $t(90) = 2.10$ ,  $p < .05$ . These findings suggest that familial modeling and parental attachment may be indicative of adolescents and young adults who are at greater risk to become smokers.

## CIVILIZATION-AS-OVER: TANKIAN'S "EMPTY WALLS"

*Presented at the Winthrop University English Department Graduate and Undergraduate Conference, Rock Hill, S.C., February 2008*

**Lacey Long, 2009**

Serj Tankian's "Empty Walls," the music video, was released on September 11, 2007, the sixth anniversary of 9/11. The song's vague lyrics facilitate a range of interpretation, from one extreme to another (celebration to condemnation), but the history of the artist, the

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*Faculty Sponsor:*

*Gloria Jones, Ph.D.*

timing of the song's and video's release, the focus within the video on atrocities, and the contemporary political climate of the US heavily support the latter interpretation only. The prevailing theme, that of desperate war protest, manifests primarily in a macabre parody of the 9/11 attacks in a kindergarten classroom and the reenactment of the Iraq War by the children. Obvious parallels can be drawn between the video's imagery and historical reality that qualify this music video as a parody, but deeper than that lies its message and theoretical impact on US society and the war protest movement. I will attempt to prove that this is not simply a grim parody or bit of political drama, but that it is a warning about the media's portrayal of the war effort and a combination of condemnation of the acts done in the name of fighting terrorism and a warning about our own actions through their mirroring in young children whose entire lives have been spent in a post-9/11 world. All of this, and the video and song themselves, will be examined within the context of Tankian's album, *Elect the Dead*, with its overarching theme of "Civilization is Over." All these elements combine to give a distinct and colorful view on the current war, the actions committed by those fighting and directing it, and the messages with which the newest generation is being raised.

## PROCRASTINATION AND STRESS IN HONORS AND NON-HONORS COLLEGE STUDENTS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Chelli Lowe, 2009**

**Chris Osborne, 2009**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleigh, Ph.D.*

Previous research on procrastination levels concentrated on the general population of college students (e.g. Brownlow & Reasinger, 2000; Ferrari & Scher, 2000; Lee, 2005; Pychyl, Morin, & Salmon, 2000). The present study focused specifically on honors versus non-honors students. Participants were 63 undergraduates, with a mean age of 20.79 (SD = 5.06). Thirty-eight participants identified themselves as honors students, while twenty-five did not. We assessed procrastination, self-esteem, stress, and study habits with established scales. We calculated a Procrastination Score for each participant. The possible range was 23 to 92, with a mean of 57.97 (SD = 8.87). We also calculated a Stress Score. The possible range was 21 to 84, with a mean of 36.71 (SD = 10.07). There was no significant relationship between procrastination and stress. The higher the participants' Procrastination Score, the more they agreed that they function best when stressed,  $r = .55$ ,  $p < .01$ , and that they do their best work under pressure,  $r = .59$ ,  $p < .01$ . The lower the participants' self-esteem, the more they agreed that they do their best work under pressure,  $r = -.31$ ,  $p < .05$ . The higher the participants' self-esteem, the higher their stress level,  $r = .45$ ,  $p < .01$ , and the more they reported over-reacting to situations,  $r = .25$ ,  $p < .05$ . The higher the participants' SAT score, the more they agreed that they put things off until tomorrow,  $r = .32$ ,  $p < .05$ . Putting off chores was

not associated with college GPA. We found no differences between honors and other students on procrastination, stress, or self-esteem. In general, we found high levels of procrastination and low levels of stress in undergraduate students. Procrastination was associated with higher SAT scores and did not predict GPA, suggesting that smarter students may be able to delay work while still maintaining typical levels of academic performance. Procrastination also was linked to students' beliefs that they did their best work under pressure; however, students who agreed that they did their best work under pressure also reported lower self-esteem. Perhaps procrastination is an effective academic, but not emotional, coping strategy.

## PET OWNERSHIP, GRIEF EDUCATION, AND ATTITUDES TOWARD PET LOSS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

### **Karen Gilson, 2010**

*Department of Psychology*

*Faculty Mentor:*

*Merry J. Sleight, Ph.D.*

This study examined both pet-owners and non pet-owners perceptions of grief following pet loss. Participants were 65 young adults, with a mean age of 21.32 (SD = 3.97). Thirty-five percent were currently enrolled in a grief education class. Participants completed a survey that assessed current and past pet ownership, attitudes toward pets, and experiences with pet loss. There were no differences between pet-owners who had lost a pet and those who had not. Regarding participants who had never lost a pet, Caucasians were more likely than African-Americans to agree that there is an afterlife for deceased pets,  $t(23) = -2.40, p < .05$ , and that their beliefs about pets matched their parents' beliefs about pets,  $t(57) = -2.49, p < .05$ . We compared participants in the grief class to those not enrolled. Educated participants were less likely to agree that their attitudes about pets matched their parents' attitudes about pets,  $t(63) = -2.02, p < .05$ . When examining people who had never lost a pet, educated participants were more likely to support paid leave from work following pet loss,  $t(23) = 3.08, p < .01$ , and saving the ashes of a deceased pet,  $t(23) = 2.27, p < .05$ . When examining pet-owners, educated participants were more likely to agree that they felt closer to a pet than to many of their friends,  $t(50) = 2.38, p < .05$ , and to other family members,  $t(50) = 2.47, p < .05$ . When examining pet-owners who had lost a pet, educated participants were more likely to agree that they looked for someone to blame after losing a pet,  $t(46) = 2.46, p < .05$ , their appetite decreased,  $t(46) = 2.40, p < .05$ , they deliberately avoided reminders of their pet,  $t(46) = 2.60, p < .05$ , and they had difficulty concentrating,  $t(46) = 2.04, p < .05$ . In general, pet-owners and non pet-owners reported similar attitudes. Participants also held similar attitudes across gender and race. In contrast, grief education emerged as an influential variable. This relationship might reflect the effect of education or may indicate that certain people are drawn to grief education.

# THE MOST AGGRESSIVE SCHOOL CHILDREN: WHAT CAN WE TELL ABOUT THEM WHEN THEY WERE YOUNGER?

*To be presented at the 20th Meeting of the International Society for the Study of Behavioral Development, Wurzburg, Germany, July 2008*

**Cassie Daniels, 2008**

**Kathleen Jocoy, 2008**

*Department of Psychology*

*Faculty Mentor:*

*Cheryl Fortner-Wood, Ph.D.*

This study builds on the work of Belsky, et al. (2007) regarding the effects of early experiences on later externalizing behavior. Using the same data, the NICHD Study of Early Child Care and Youth Development, we focused our analyses on a subset of 83 children who were reported to display the highest levels of aggression in both Grade 3 (G3) and Grade 5 (G5). The eight aggression items from the Child Behavior Checklist -Teacher Report Form (Achenbach, 1991) had high internal consistency at both 3rd and 5th grades (Cronbach's  $\alpha = .87$  and  $.86$  respectively). The group of 83 children was predominantly male (63%), Caucasian (69%), and not poor (58%). Half of the children had fathers at home and 82% had working mothers. Grade 3 income variables that were significantly related to aggressive behavior in G3 and G5 (income, poverty status, maternal employment) yielded smaller correlations than receiving public assistance at one month (G3  $r = .22^*$ ; G5  $r = .38^{**}$ ). Following the findings of Belsky, et al. (2007), where parenting quality was the strongest and most consistent predictor of child outcomes, we examined the relationship of parenting on aggression. Although total and subscale scores of the Home Observation for Measurement of the Environment were related to aggression in the full data set ( $N = 838$ ), they failed to explain variability in aggression scores for the most aggressive subsample (Middle Childhood HOME; Caldwell & Bradley, 1984; i.e. responsivity, encourage maturity, acceptance, learning materials, enrichment, family companionship, physical environment). Additional analyses and interpretations will be shared.

## THE SHAKESPEAREAN PROBLEM

*Presented at the Winthrop University English Department Graduate and Undergraduate Conference, Rock Hill, S.C., February 2008*

**Nicole DuBose, 2008**

In my paper, titled "The Shakespearean Problem," I analyze Shakespeare's *The Merchant of Venice*. My argument is that Shakespeare's goal when writing *The Merchant of Venice* was to expose social and religious injustice demonstrated during his time period. The social injustice discussed in my paper mainly focuses on the injustice experienced by

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women during this time. I discuss the fact that women had little power and importance during Shakespeare's time, and that daughters had even less power than other women and were seen as little more than property, which can be examined in the characters of Jessica and Portia. The second form of social injustice toward women was that of the unequal distribution of faithfulness between men and women in marriage. Often women were faithful to husbands who violated their marriages; Portia remained faithful to Bassanio, while Bassanio and Antonio celebrated the end of the hearing by going out for a night in the town. The third form of social injustice that women faced were the fact that they weren't thought to need an education. In order for a woman to be taken seriously by men she had to do away with her feminine appearance and dress as a man like Portia in *The Merchant of Venice*. Religious intolerance was expressed in *The Merchant of Venice* through the relationship between Antonio, a Christian, and Shylock, a Jew. The standard way of reading *The Merchant of Venice* is as an Anti-Semitic text. However, the relationship between Antonio and Shylock could be looked at as a different form of religious conflict based upon the fact that there weren't many Jews around during Shakespeare's time. Shakespeare could be using their relationship to oust a bigger conflict between Catholics and Protestants prevalent during that time period. Shylock could actually represent the oppressed Catholics while Antonio and the people of Venice are Protestants. I also examine the views people had of "New Christians" or converted Jews as it dealt with Shylock in the text.

## HOW CAN I BE TUTORED WHEN I'M TERRIFIED?

*Presented at the Southeastern Writing Center Association's Annual Conference, Savannah, Ga., February 2008*

**Lacey Long, 2009**

*Department of English*

*Faculty Mentor:*

*Jane Bowman Smith, Ph.D.*

Writing center visits can be nerve-racking for the client, especially for the first-time visitor. The necessity of appointments and forms lend the visit an air of officiality and clinicality ("the tutor will see you now") that tends to put people on guard rather than at ease. As it is preferable for students to be comfortable in a writing center (as it is more conducive to writing and learning in general), I propose that each writing center examine every aspect of a visit (office-business as well as the tutorial itself), from the moment the student arrives at the door to the moment s/he exits through it, to determine if anything can be done to reduce the potential level of stress in the client. Special attention ought to be paid to wording and tone of any introductory speeches aimed at the student, at tutors' behavior toward clients, and any explanatory comments given as to why writing centers can seem so businesslike (the necessity of forms, appointments, the list of required materials a student is expected to bring, etc.). Many aspects of this potentially stress-promoting environment can be quite invisible to writing center workers who have fallen into the comfort of routine,

but to the new or timid student, hyperaware with nervousness, a visit to the writing center can be so nerve-wracking that s/he takes nothing away from it but the decision to never come again.

## BLOGGING AND THE SCIENCE COMMUNITY: OPENING NEW CHANNELS OF COMMUNICATION

*Presented at NCUR 22, Salisbury, Md., April 2008*

**Roaxann Wilkinson, 2008**

*Department of  
Mass Communication  
Faculty Mentor:  
Marsha Bollinger, Ph.D.  
Faculty Sponsor:  
Marilyn Sarow, Ph.D.*

Blogs have become creative tools for politicians, students and others, giving voice to their observations and opinions. Scientists, with a long tradition of demanding vetted sources and peer reviews, have also entered the blogosphere, a unique virtual community in which ideas are shared instantly with others. With the August 2005 issue of *The Scientist*, David Secko was one of the first to identify and recognize science blogs as an emerging communication tool when he identified 47 science blogs in his article, "Power of the Blog". This paper revisits these 47 blogs to determine how science blogs utilize tools common in vetted material within the virtual realm. The paper determined 1) the viability of the blogs - 44 of the 47 blogs were still accessible; 2) the nature and the affiliation of the blog hosts - 51 percent (24) had male hosts, 51 percent (24) were personal blogs and 47 percent (22) used full names; 3) the sourcing of the blogs - 81 percent (38) used hyperlinks to original sources; 4) the linking and navigation tools available within the blog - 72 percent (34) used searchable archives; and 5) the content of the blog. Blog content was varied. Some blogs had only news items with hyper-links to esoteric sources on very narrowly focused topics often overlooked by mainstream media; others were personal diary-type insights offered by the blog host which provided an insider's view on life as a scientist. Others mixed linked media information with insider opinions and personal comments. While blogs cannot equal vetted, peer-reviewed information, science bloggers do use blogs as a communication tool to get information and their opinions out to others.



## LEGAL LANGUAGE AND LANGUAGE REGISTERS

*Presented at the Sigma Tau Delta International Conference, Louisville, Ky., March 2008*

*Presentation Supported by a SPAR Grant*

### **Christina Williams, 2008**

*Department of English*

*Faculty Mentor:*

*Marguerite Quintelli-Neary, Ph.D.*

This paper asserts that the effort to eliminate ambiguity in an otherwise imprecise language creates lexical, syntactic, and semantic peculiarities that make legalese a redundant and protracted deviation of Standard English that has been the target of debates regarding language register and reform. A discussion of linguistic evidence and judicial actions illustrate these peculiarities. Further consideration may even prove that the very problems of legal language are sustained by the dependency and flexibility of these three language components to interrelate with each other on multiple levels.

## BEHAVIORAL CHANGES OF CAPTIVE PYGOSCELIS PAPUA AND EUDYPTES CRESTATUS DURING THE PROGRESSION OF PRE AND EARLY BREEDING SEASON

*Presented at the 36th Annual Southern Regional Honors Conference, Birmingham, Ala., March 2008*

### **Jennifer Payne, 2008**

*Department of Biology*

*Faculty Mentor:*

*William Rogers, Ph.D.*

My research focuses on comparisons of social interactions in Gentoo and Rockhopper penguins. Data were gathered by observing the 9 Gentoo and 13 Rockhoppers at the Riverbanks Zoo in Columbia, SC. The penguins have a shared enclosure that also contains 2 King penguins. In nature, Gentoos and Rockhoppers the focal species sometimes live sympatrically. I have completed 40 hours of observations all of them based on focal animal samples. Data were taken between January 20th and March 2nd 2008. I will evaluate how behaviors change as the breeding season progresses. I will also compare the behaviors of the two species. Although this is being written before all data have been analyzed, Gentoos appear to spend more time in groups and typically swim in large groups. Rockhoppers were seen more often as single or paired individuals. On the other hand, Rockhoppers showed much higher rates of allopreening in comparison with Gentoos, which show little or no grooming of other birds. Gentoos also appear more comfortable closer to the water's edge, while the rockhoppers seemed to prefer more elevated positions away from the water. Rockhoppers engaged in nest building earlier than did Gentoos but the Gentoos caught up and 3/4th of the couples built nests.

# VISUALIZING UNCERTAINTY FOR GEOGRAPHICAL INFORMATION IN THE GLOBAL TERRORISM DATABASE

*Presented at the SPIE Defense and Security Symposium, Orlando, Fla., March 2008*

**Josh Jones, 2008**

*Department of Biology*

*Faculty Mentor:*

*William Thacker, Ph.D.*

Presenting information on a geopolitical map can offer powerful insight into a problem by leveraging an individual's innate capacity to discover patterns and to use map-related cues to incorporate pre-existing knowledge. This mode of presentation is not without its flaws, however, as the act of placing information at specific coordinates can imply a false sense of the data's geo-spatial certainty. Traditional uncertainty visualization techniques, such as those that change primitive attributes or employ animation, can create large amounts of clutter or actively distract when visualizing geo-spatially uncertain events within large datasets. To effectively identify geo-spatial trends within the Global Terrorism Database of the START Center, we have developed a novel usage of squarified treemaps that maintains the strengths of traditional map-viewing but incorporates some measure of data verity.

# PHILEMON: PAUL'S LETTER IN FAVOR OF FREEDOM OR OPPRESSION

*Presented at NCUR 22, Salisbury, Md., April 2008*

**Jessica L. Bean, 2008**

*Department of Philosophy and*

*Religious Studies*

*Faculty Mentor:*

*Peter J. Judge, Ph.D.*

Historically the Christian attitude towards slavery is filled with ambiguity. It seems from early on Christians have turned to portions of the Bible either to defend or condemn enslavement of humans by other humans. The apostle Paul did not spend much time in his letters on the subject. At least it could be said that he was not concerned enough to overturn social structures in any revolutionary way. The letter to Philemon is a controversial text in this very regard. Paul met a runaway slave Onesimus in prison and was now sending him back to his owner. This letter, only 25 verses, was written by Paul to his friend and slave owner Philemon. Paul was sending Onesimus, Philemon's slave, back to Philemon, and it was Paul's desire that the slave be accepted back upon his return. Over the centuries the letter of Philemon is quoted as a defense of the institution of slavery. It would seem Paul simply accepted the social status quo, but there is another way to read this letter. Paul was not arguing Onesimus' legal right, rather he was asking for Philemon to accept Onesimus as a brother. Paul's encouragement of Onesimus'

acceptance as a brother would ultimately bring about his freedom because he would no longer be considered a slave. What Paul reveals through his actions is an ultimate concern for every human beings and relationships. While not conventional in his methods, Paul in the letter of Philemon did not support the institution of slavery, as many Christians have believed, rather he approached this situation of slavery in a manner which respected both the slave owner and slave, yet would end the enslavement of Onesimus.

## THE EFFECT OF ACTIVATED PROTEIN C ON PROSTATE TUMOR CELL INVASION

*Presented at the Annual Meeting of the American Society for Biochemistry and Molecular Biology San Diego, Calif., April 2008 and the Tri Beta Biological Honors Society Southeastern Regional Conference, Greenville, S.C., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE, a Winthrop University Research Council Grant and the McKay Urology Endowment Fund*

### **Lacey Brunson, 2009**

*Department of Biology*

*Faculty Mentors:*

*Laura Glasscock, Ph.D.*

*Shereen Mehrem*

*Chris Teigland, M.D.*

*(McKay Urology)*

We investigated the role of the prostate tumor cell associated protein, thrombomodulin (TM), in prostate tumor cell invasion in vitro. Specifically, we determined if TM, thrombin, protein C, activated protein C (APC) affect invasion by regulating interactions between plasminogen activator inhibitor I (PAI-1) and urokinase type plasminogen activator (uPA). We first determined that monoclonal antibodies to the extracellular chondroitin sulphate domain of TM increased the ability of DU-145 cell lines to migrate in a modified Boyden chamber. Addition of thrombin and protein C did not affect DU-145 invasion. Addition of 0-10 ng/ml APC did not affect tumor cell invasion, however, higher than 10 ng/ml slightly decreased DU-145 invasion. Since APC has been shown to affect tumor cell invasion in ovarian cancer by competing with uPA for PAI-1, we further determined if APC also regulates tumor cell invasion in prostate cancer by competing for PAI-1. In the presence of uPA and PAI-1, APC competed with uPA for binding to PAI-1, enabling uPA to increase the invasiveness of DU-145 cells. We conclude that in the presence of TM, thrombin, protein C, PAI-1 and uPA, TM regulates tumor cell invasion by generating APC, which can bind to PAI-1, freeing uPA to facilitate tumor cell invasion.

# FORMATION OF PROXIMAL $\alpha$ -HYDROXY SILYL ENOL ETHERS FROM $\alpha,\beta$ -EPOXYKETONES USING SILYLLITHIUM REAGENTS

*Presented at the 235th National Meeting of the American Chemical Society, New Orleans, La., April 2008*

*Supported by a Winthrop University Research Council Grant*

## **Heather K. Baker, 2009**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*Aaron M. Hartel, Ph.D.*

Silyl enol ethers are important synthetic intermediates and have found extensive use in carbon-carbon bond forming reactions. Of particular importance is the Mukaiyama aldol reaction of a silyl enol ether with an aldehyde or ketone in the presence of a Lewis acid catalyst to form mono aldols. An extension of the Mukaiyama aldol reaction using proximal  $\alpha$ -hydroxy silyl enol ethers could provide a simple, general route to elusive double aldols. However, a general method for the preparation of the proximal  $\alpha$ -hydroxy silyl enol ethers required for this method has yet to be reported. We have now developed a simple, general method for the regio- and stereoselective preparation of proximal  $\alpha$ -hydroxy silyl enol ethers from  $\alpha,\beta$ -epoxyketones using silyllithium reagents. The proposed mechanism involves nucleophilic attack of the silyllithium reagent on the carbonyl followed by a carbon-to-oxygen silyl group migration (Brook rearrangement) with subsequent opening of the epoxide. In order to determine the ideal conditions for the reaction, the investigative substrate 2,3-epoxy-1-phenyl-1-propanone was reacted with a variety of silyllithium reagents in different solvents and at various temperatures. The use of 1.3-2.0 equivalents of methylphenylsilyllithium in toluene at  $-78^\circ\text{C}$  gave the highest yield of the desired proximal  $\alpha$ -hydroxy silyl enol ether. These conditions were applied to several differentially substituted  $\alpha,\beta$ -epoxyketones to determine the scope and limitations of the method. The corresponding proximal  $\alpha$ -hydroxy silyl enol ethers were isolated in high yield (66-85%) with typical stereochemical ratios of  $>95:5$  E:Z. The  $\alpha,\beta$ -epoxyketones were synthesized by the epoxidation of  $\alpha,\beta$ -unsaturated ketones with hydrogen peroxide or by epoxidation of allylic alcohols with meta-chloroperoxybenzoic acid (mCPBA) followed by oxidation using tetrapropylammonium perruthenate (TPAP) and N-methylmorpholine oxide (NMO). The silyllithium reagents were formed by reacting appropriate chlorosilane with lithium metal in THF. The silyl enol ether products were isolated using column chromatography and analyzed by  $^1\text{H-NMR}$ ,  $^{13}\text{C-NMR}$ , and IR spectroscopy.

# THE ROLE OF THROMBOMODULIN IN TUMOR CELL ADHESION TO ENDOTHELIAL CELLS

*Presented at the Tri Beta Southeastern Regional Conference, Greenville, S.C., April 2008*

*Supported by an NIH Grant and the McKay Urology Endowment Fund*

**Chris Lambert, 2008**

*Department of Biology*

*Faculty Mentor:*

*Laura Glasscock, Ph.D*

Prostate Cancer (CaP) is the second most common type of cancer in men. CaP occurs when the epithelial cells of the prostate proliferate unchecked. As CaP progresses, tumor cells begin to extravasate and metastasize to the bone, lymph nodes, and brain. CaP metastasis occurs when tumor cells lose their ability to form cell-to-cell adhesions, invade surrounding tissues, and then metastasize via the blood or lymphatic vessels. Following intravasation into the blood stream, tumor cells regain the ability to form cell-to-cell adhesions for extravasation, during which tumor cells adhere to vascular endothelium and egress through the basement membrane, and form the secondary or metastatic tumor. We investigated the role of the transmembrane protein, thrombomodulin (TM), in the metastatic process. TM naturally occurs as an anticoagulant glycoprotein that is constitutively expressed on the surface of endothelial cells. TM has also been identified on CaP cell surfaces. The goal of our research was to determine how TM, on endothelial and CaP cells, is involved in tumor cell adhesion to endothelial cells therefore regulates metastasis. First, we established a calcein based cell adhesion assay to test the influence of TM on cell adhesion using the endothelial cell line EAhy926 and CaP cell line DU-145. Then monoclonal antibodies (MAb) were added that bind to the six extracellular epidermal growth factor (EGF)-like domains of TM. We determined that MAb binding to the EGF1-3, EGF 2, EGF 4-6, and EGF 5-6 domains of endothelial cells and tumor cells decreased the ability of the cells to adhere to each other. Cell-to-cell adhesion between the EC and CaP decreased by 70% in the presence of each MAb to the EGF-like domains of TM. Therefore, we conclude that TM may be involved in CaP cell metastasis by regulating cell-to-cell adhesion properties of tumor cells to endothelial cells.

# PROBING PH EFFECTS ON OLIGOMERIZATION OF ALZHEIMER'S AMYLOID-beta PEPTIDE BY SINGLE MOLECULE SPECTROSCOPY

*Presented at the 235th National Meeting of the American Chemical Society, New Orleans, La., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE*

**Kyle Duker, 2008**  
**Cassie Rodenberg, 2009**

*Department of Chemistry,  
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Faculty Mentor:  
Robin Lammi, Ph.D.*

Misfolding and aggregation of amyloid-beta peptide (AB) are recognized as causative events in Alzheimer's disease. Contrary to earlier hypotheses, recent results suggest that small soluble oligomers are the pathogenic agents; therefore, detailed examination of the earliest peptide-association steps is crucial to a molecular-level understanding of Alzheimer's disease. We have utilized single molecule spectroscopy to monitor oligomer formation in surface-tethered, fluorescently labeled AB(1-40) peptides under neutral and acidic conditions. Fresh samples at pH 7.4 consist primarily of monomers and dimers, with a small percentage of trimers; after ageing for five days, the proportions of dimers and trimers are slightly increased. At pH 5.8, peptide association is rapid: fresh samples are dominated by trimers and tetramers, with fewer dimers and larger species. Oligomer formation is successfully inhibited by the known beta-sheet-breaker peptide iA $\beta$ 5, suggesting that some degree of beta-sheet structure is present in very small aggregates. Detailed conformational studies are forthcoming.

# THREAT EFFECTS ANALYSIS - APPLYING FMEA TO MODEL COMPUTER SYSTEM THREATS

*Presented at RAMS (Reliability and Maintainability Symposium), Las Vegas, Nev., January 2008*

*Supported by a National Science Foundation Award*

**William Hanczaryk, 2008**

*Department of Mathematics  
Faculty Sponsor:  
Stephen Dannelly, Ph.D.*

As the 21st century progresses, computer systems have become a target for a new type of criminal who attacks software with malicious intent. Failure Modes and Effects Analysis, which is normally used to improve system reliability by identifying and mitigating the effects of potential system failures, provides a basic framework that can be applied to counter the threats a computer system will encounter in its operational environment. The process consists of: 1) becoming familiar with the system and system components; 2) developing

a threat model by identifying external dependencies and security assumptions; 3) identifying and classifying the types of threats to the system; 4) determining the effects of the threat; and 5) making changes to counter the potential threats. This approach ensures that the assessment of the threat will be done in a systematic and meticulous manner that is more likely to result in a secure and reliable system.

## CHARACTERIZATION OF THE SPECIFIC ROLE AND ACTIVATION OF HMGA1 IN COLON CANCER

*Presented at the Annual Meeting of the American Society for Biochemistry and Molecular Biology  
San Diego, Calif., April 2008*

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE and a  
National Science Foundation Grant*

### **Bethany Marie Bush, 2009**

*Department of Chemistry,  
Physics and Geology  
Faculty Mentors:  
Takita Felder Sumter, Ph.D  
Kimberly McKinney, M.S.*

The High Mobility Group A1 (HMGA1) proteins are a class of oncogenes whose specific role in colon and other cancers is currently emerging. Our analysis of the HMGA1 promoter region revealed several putative sites for beta-catenin/tcf binding suggesting that HMGA1 may be activated by the Apc/beta catenin pathway in colon cancer. To better understand the specific role of HMGA1 in colon carcinoma formation, we evaluated the expression of HMGA1 in the Apc(Min/+) colon cancer mouse model. Results of quantitative real-time RT-PCR (qRT-PCR) show a 9-fold increase over normal intestine in HMGA1 mRNA where Apc is truncated and in tumors. Consistent with qRT-PCR data, HMGA1 protein levels were also significantly higher in Apc(Min/+) intestinal tumors than those from normal mouse tissues. To determine if Apc/beta catenin signaling directly impacts HMGA1 expression, we tested the effect of Apc recovery on HMGA1 expression. Preliminary results indicate that zinc-induced full-length Apc expression suppresses HMGA1 levels and that truncations in Apc may activate HMGA1 function to promote cancer initiation and progression. Collectively, these results provide the first line of evidence supporting the cooperation of truncated Apc and HMGA1 in colon cancer.

# SUZUKI-MIYAJIURA CROSS COUPLING OF ARENEDIAZONIUM SALTS AND ARYLTRIFLUOROBORATES UTILIZING RECYCLABLE HETEROGENEOUS PALLADIUM CATALYST SYSTEMS

*Presented at the 235th National Meeting of the American Chemical Society, New Orleans, La., April 2008*

**Brad D. Angel, 2009**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*James M. Hanna Jr., Ph.D.*

Polyarene structures, such as terphenyls, quaterphenyls, and sexiphenyls, have shown great promise in some important emerging areas of science. Organic light-emitting diodes utilize polyarenes for their large and stable conjugated systems; also, preliminary research has shown that drugs built around a polyarene backbone may show HIV protease inhibition activity, furthering development of AIDS treatment. The Suzuki-Miyajura reaction is an increasingly popular pathway for carbon-carbon bond formation and the synthesis of biaryl compounds. The Suzuki-Miyajura coupling of arenediazonium salts and aryltrifluoroborates has been shown to be a rather effective means for the synthesis of biaryls, having the advantages of a short reaction time at moderate temperatures and under aerobic conditions. Previously, a group of heterogeneous palladium catalyst systems were compared under a standard set of conditions for their activity in the coupling of an arenediazonium salt and aryltrifluoroborate. Surprisingly, palladium(0) on carbon (Pd/C) was found to be the most effective catalyst system, showing higher yields and greater suppression of side reactions than either PdEnCat30TM or a polymer-supported Pd/DABCO complex, two other heterogeneous palladium catalysts which were studied. Pd/C also performed better than palladium acetate, a common homogenous palladium catalyst. Pd/C is an ideal catalyst for these reactions, as it is relatively inexpensive, readily available, and can be easily recovered from the reaction by simple filtration. Also, under optimized conditions, Pd/C gave near quantitative yields of the model biaryl product. To investigate the catalytic activity of palladium on carbon after successive reactions, a recyclability study was carried out under optimized conditions. Two series of five subsequent reactions using identical molar amounts and conditions were carried out using two separate lots of palladium on carbon. Both series showed that palladium on carbon possesses rather high catalytic activity for three uses, and then product yield begins to fall somewhat as side reactions become more competitive and byproducts increase, presumably due to palladium leaching from the catalyst surface. These data show that palladium on carbon is a cheap and effective catalyst for the Suzuki-Miyajura cross-coupling of arenediazonium salts and aryltrifluoroborates, and may be a means to a facile one-pot synthesis of polyarene systems.



# PALLADIUM-CATALYZED HOMOCOUPLING OF ARENEDIAZONIUM SALTS: SCOPE AND LIMITATIONS

*Presented at the 235th National Meeting of the American Chemical Society, New Orleans, La., April 2008*

**Vasilina S. Kochurina, 2010**

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*Faculty Mentor:*

*James M. Hanna Jr., Ph.D.*

The biaryl unit is found in a number of natural and synthetic products, including pharmaceuticals, conducting polymers, and optically active ligands for asymmetric synthesis, and thus a number of reactions have been developed for the synthesis of this unit. The synthesis of symmetric biaryls traditionally involves the Ullmann reaction, but since this process typically requires high temperatures, other methods have been developed using milder palladium- and nickel-mediated protocols for synthesis of symmetrical biaryls from aryl halides or from phenol derivatives such as aryl sulfonates. On the other hand, transition-metal-catalyzed reactions of arenediazonium salts have not been explored to these lengths, although stoichiometric copper-mediated methods are known. Arenediazonium tetrafluoroborate salts, in particular, can be easily synthesized from arylamines, which can be obtained easier than corresponding aryl halides or phenols. Using these arenediazonium salts as our starting materials, we attempted to develop a palladium-catalyzed homocoupling reaction that would produce symmetrical biaryls. Prior research in our laboratory had shown that such a homocoupling reaction is possible in methanol solvent with palladium acetate as the catalyst. Based on these findings, a scope and limitations study was conducted on a number of arenediazonium tetrafluoroborates, with yields of symmetrical biaryls ranging from 0 to 88%. In general, electron-rich substrates gave good yields of the desired biaryl and very little of the reduced arene by product. Electron-neutral and electron-poor substrates gave lower yields of desired biaryl, along with lower biaryl/arene ratios. These yields were determined by gas chromatography using an internal standard, and the identity of products was confirmed by mass spectrometry and co-injection with pure samples.

# CHARACTERIZATION OF THE FUNCTIONAL DOMAINS OF HIGH MOBILITY GROUP A1 (HMGA1)

*Presented at the First Annual South Carolina INBRE Research Symposium, Charleston, S.C., January 2008 and the Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Diego, Calif., April 2008*  
*Supported by a National Science Foundation Grant*

**Kelly Pace, 2008**

The High Mobility Group A1 (HMGA1) gene encodes for two protein isoforms, HM-

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GA1a and HMGA1b, produced by alternative splicing of *hmga1*. Expression of HMGA1 causes cell growth and division, however, when overexpressed HMGA1 is implicated in transformation and metastasis. HMGA1 acts by binding to AT rich regions of the minor grooves of DNA, but its specific mechanism of initiating neoplastic transformation is still unknown. To study this, we have focused on the structural components of HMGA1, which has three AT hook DNA binding domains. We are examining how deletions of one or more of these binding domains affect the ability of HMGA1 to cause transformation. Previous studies by our lab identify the second and third binding domains are important regions for transformation. In order to further analyze the domains, we characterized a new construct which allows inducible expression of the protein. The construct produces HMGA1 fused to an estrogen receptor subunit. When cells expressing this protein are treated with an estrogen derivative, 4-hydroxytamoxifen, HMGA1 is translocated into the nucleus where it is active. In addition, induction of HMGA1-ER expression promotes the transformed phenotype. This construct should be useful in future characterization studies of the AT hook DNA binding domains of HMGA1.

## ENHANCING OPEN-MINDED THINKING AND CROSS-CULTURAL RELATIONS: POSITIVE MOOD EFFECTS

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008  
Supported by a Winthrop University Research Council Grant  
Nominated for the Outstanding Professional Paper Award, Southeastern Psychological Association*

**Amy Haley, 2008**  
**Brittany Martin, 2007**

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

Two experiments were conducted with American college students to determine whether affective states influence cross-cultural empathy, perspective taking and choices about strategies for conflict resolution. Participants in Experiment 1 read about a target who experienced distress and assumed a perspective that was consistent or inconsistent with American norms. When evaluating targets with a dissimilar (versus similar) cultural perspective, participants in neutral affect or negative affect conditions exhibited less perspective taking and emotional empathy. In contrast, students in a positive (versus neutral or negative) affect condition exhibited greater perspective taking and feelings of compassion and sympathy. In Experiment 2, participants read about a conflict between two target persons based on a difference in cultural norms. A pattern of perspective taking consistent with findings of Experiment 1 was found such that positive affect promoted appreciation of a divergent cultural perspective. In addition, individuals in a positive (versus neutral) affect condition exhibited a greater preference for cooperative (versus competitive) strategies for conflict resolution. Results support Fredrickson's (1998; 2001) broaden

and build theory, suggesting positive affect promotes open-minded, flexible thinking and builds social resources.

## THE WRITING CENTER OR THE PROFESSOR'S OFFICE

*Presented at the Southeastern Writing Center Association's Annual Conference, Savannah, Ga., February 2008*

**Ashley Carmichael, 2008**

*Department of English*

*Faculty Mentor:*

*Jane Bowman Smith, Ph.D.*

The Writing Center is a place where students come to get help with their writing from other students. However, once professors are introduced into the equation, things begin to change. Professors tutoring in the Writing Center may present positives such as a different perspective of writing and positive role models, but they can also imbalance the Center's atmosphere, and more importantly, professors unintentionally intimidate student clients. For many students, mostly freshman and sophomores, having professors tutor them is like being in the professor's office, a place where they feel they are being constantly judged and graded. This is not the professor's fault, mainly a stigma younger students, mostly freshman and sophomores, attach to authoritative figures on a college campus. The purpose of this paper will be to explore this stigma and to give another perspective on the effects of professors as tutors in the Writing Center. The paper will explore research involving the psychology of younger students and students' relationships with professors and other students in and outside the Writing Center. Through the research and the experience of the author, this paper will attempt to prove that while having professors as tutors in the Writing Center is undoubtedly beneficial, it can have negative effects as well.

## AN EXPERIMENTAL EXAMINATION OF REACTIONS TO PRAYER BY PUBLIC OFFICIALS AT GOVERNMENTAL MEETINGS

*Presented at the Annual Meeting of the International Academy of Linguistics, Behavioral and Social Sciences, Washington, D.C., November 2007*

**Aimee M. West, 2010**

**Melissa C. Williams, 2007**

**Jacob M. Brockman**

When a resident of Great Falls, SC objected to sectarian prayer during Town Council meetings, a range of public reactions were evident and the judicial system eventually reaffirmed the separation of church and state (Knauss, 2004). The Town Council not only

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*Faculty Mentor:*

*Timothy K. Daugherty, Ph.D.*

lost its case but tens of thousands of dollars in legal fees; despite the 4th Circuit Court of Appeals clear ruling and the cautionary example of a government body's legal and financial difficulties, prayer by public officials continues to be promoted in some settings (Hart, 2004) and public reactions continue to be varied. Recently, approximately 2500 protesters reportedly rallied in favor of such prayer in tiny Yadkinville, NC. Yadkin County had just decided to "stop referring to Jesus during prayers at public meetings" (Deaver, 2007). It was hypothesized that the type of religious prayer and the reaction of others may influence reactions. Research, for example, suggests that perceived group norms influences individual perception and behavior (e.g., Myers, Wojcicki, & Aardema, 1977). The current study examined the individual reactions of college women to an experimentally manipulated news story regarding prayer by a public official at a city council meeting. Results suggested that individual responses - support and intention to vote - to prayer by public officials at governmental meetings depend on a combination of factors. Among college women, following the perceived group norm appears particularly common when the religion of the government official is Muslim rather than Christian. The study is limited primarily by its sample. It is not clear that results will generalize to populations other than college women. Furthermore, the size of the sample did not provide sufficient power to examine additional potential factors likely to interact with those currently examined (Krugland, Pierro, Mannetti, & De Grada, 2006; Maslach, Santee, & Wade, 1987). Future research will examine other age groups, men, and persons with diverse socioeconomic status.

## PSYCHOMETRIC PROPERTIES OF THE THEODICY SCALE: INDIVIDUAL DIFFERENCES IN THE PERCEPTION OF DIVINE INTERVENTION

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

**Aimee M. West, 2010**

**Melissa C. Williams, 2007**

*Department of Psychology*

*Faculty Mentor:*

*Timothy K. Daugherty, Ph.D.*

An increasingly frequent target of social scientific study, religiosity has been measured in a wide variety of ways (Paloutzian & Park, 2005; Slater, Hall, & Edwards, 2001) though theodicy, sometimes referred to as God Control, has received limited scientific attention to date (Furnham & Brown, 1992; Wong-McDonald & Gorsuch, 2004). The term theodicy translates from Greek as "the justice of God." Psychologically, the term refers to the perception that God is active in controlling current events (Meier, 1988). The current study examined the psychometric properties of a new instrument, the Theodicy Scale. We anticipated that theodicy would be related to, though not synonymous with, religiosity. For example, a highly religious person might view God as not intervening in

human events, and it is possible for a relatively irreligious person to imagine an interventionist God. Slife and Melling (2006) distinguish, for example, between theism (belief in a God currently active in history) and deism (belief in a God whose activity ended with creation). Results supported the reliability of the Theodicy Scale when administered to college students. Some evidence arose for construct validation, a process that will continue with further studies. Theodicy scores appeared to represent a unitary construct and varied independent of social desirability bias. Consistent with extant research (Riedel-Heller, Matschinger, & Angermeyer, 2005), medical “advice” varied in response to the experimental manipulation of physical versus mental illness; however, Theodicy scores were unrelated to the advice ratings.

## BELIEF IN GLOBAL WARMING AS SOCIALLY MOTIVATED COGNITION

*Presented at the Southeastern Psychological Association Convention, Charlotte, N.C., March 2008*

*Winner of the BigSUR All Conference Award in 2007*

### **Ashli Brooke Walters, 2007**

*Department of Psychology*

*Faculty Mentor:*

*Jeff Sinn, Ph.D.*

Evidence suggests epistemic and existential needs, as well as ideological rationalizations, drive people to adopt conservative positions centered around the core themes of aversion to change and endorsement of inequality (Jost et al., 2003). We extended this research by assessing attitudes towards global warming and species extinction. We operationalized conservatism at three different levels: personality structure, political beliefs, and cosmological beliefs. We tested hypotheses at the  $\alpha = .05$  with 160 college subjects during the fall of 2006, obtaining significant correlations in 15 of the 16 hypothesized relationships. The significant correlations with belief/concern with global warming and species extinction (respectively) were as follows: Openness ( $r = .34, .29$ ), Absorption ( $.20, .29$ ), Need for Closure – Order ( $-.13$  for extinction), Right Wing Authoritarianism ( $-.24, -.31$ ), Social Dominance Orientation ( $-.27, -.27$ ), System Justification ( $-.17-.20$ ), Evolution Belief ( $.37, .44$ ), and Religiosity ( $-.27, -.29$ ). The results suggest that people with conservative patterns of thought will tend to resist important judgments about the state of the world despite an ever growing body of empirical evidence. Further research might address strategies for framing the issues of global warming and species extinction in a way that is less threatening to those with a conservative orientation.

# THE REPUBLIC OF PLATO OR SOCRATES?: A DEFENSE OF THE IRONIC INTERPRETATION AND ITS SOCRATIC GENESIS

*Presented at the South Carolina Political Science Association Meeting, Orangeburg, S.C., March 2008*

**William Joseph Maye, 2008**

*Department of Political Science*

*Faculty Mentor:*

*Michael Libscomb, Ph.D.*

The Republic of Plato has been highly debated piece within philosophy and political theory for centuries. As a result of the disagreement that exists in regard to the text's true meaning, a great deal of literature has been presented in favor of either a literal interpretation or an ironic/esoteric interpretation. Through a comparison to the Apology and an investigation of textual and contextual circumstances within the Republic, this essay argues that the Republic is indeed an ironic piece of literature meant to expose the limits of human reason and the dangers of intellectual hubris. As a correlative argument, this essay also argues that the esoteric message encrypted within the Republic is not representative of Platonic doctrine, but rather is the intellectual doctrine of Socrates himself.



## Other Student/Faculty Collaborations



### PARENCHYMAL ULTRASTRUCTURE AND STEM CELL POPULATIONS IN CATENULA LEMNAE (PLATYHELMINTHES, CATENULIDA)

**Kevin Ryan, 2011**

*Department of Biology*

*Faculty Mentor:*

*Julian P. S. Smith III, Ph.D.*

Members of the Genus *Catenula* differ from members of the Genus *Stenostomum* in the possession of a cellular parenchyma instead of a fluid-filled body cavity. Previous ultrastructural studies of *Catenula* have described one type of parenchymal cell containing granular material of unknown function; the cells have been referred to as “granular strands”. *Catenula lemnae* possesses two distinct types of parenchymal cells: an outer granular-strand-type cell and an inner cell that seems to be used for lipid storage. These results suggest that either the second type of cell has been missed in earlier studies of *Catenula* or that there is a greater diversity of cells than previously thought in the parenchyma of *Catenula*. As in other flatworms, members of the Genus *Catenula* have stem cells or neoblasts responsible for normal tissue replacement, regeneration, and production of gametes. Studies of stem cell dynamics in this genus are nonexistent. Initial studies of mitotically active cells in *Catenula lemnae* showed dividing cells at the base of the gastrodermis, in the parenchyma, or in the epidermis proper. The last observation is interesting as intraepidermal mitoses, while not previously reported from the Genus *Catenula* are otherwise uniquely found among the *Catenulida* within the *Platyhelminthes*.

# MITOSIS IN RESPONSE TO STARVATION AND FEEDING IN STENOSTOMUM VIRGINIANUM (PLATYHELMENTHES, CATENULIDA)

*Supported by the Winthrop University 2007 Winthrop Scholarship*

**Sara Merlie, 2011**

*Department of Biology*

*Faculty Mentor:*

*Julian P. S. Smith III, Ph.D.*

The catenulid flatworms, like the better-known triclad, grow and shrink in response to starvation and feeding, apparently due to their ability to metabolize their own tissues and continue production of stem cells during starvation. As part of a larger study on stem cell dynamics in *Stenostomum virginianum*, we examined the rates of mitosis in animals that were starved for three weeks and then fed for 48 hours. We found low, but persistent, numbers of mitotic cells in the starved animals, suggesting that even those that are starved are capable of metabolizing their own tissues in order to provide energy for normal cell replacement. Following feeding, an initial pulse of mitotic cells was seen after two hours, suggesting that a portion of the stem cells were arrested in the G2 phase of the cell cycle, and a much larger pulse was seen after 24 hours, indicating the amount of time required for stem cells to pass from G1 to mitosis. These results are similar to those obtained by others for the triclad flatworms, which suggests that the stem cell system may be a valid synapomorphy for the Phylum Platyhelmines.

# PHOTORECEPTOR-ASSOCIATED STRUCTURES IN STENOSTOMUM VIRGINIANUM (CATENULIDA): PAX6 AND SV2 IMMUNOREACTIVITY

**James Smith, 2011**

*Department of Biology*

*Faculty Mentor:*

*Julian P. S. Smith III, Ph.D.*

Pax6 serves as the “master control gene” for eye development in a wide variety of phyla. Catenulid flatworms are not known to have eyes, although cells ultrastructurally similar to photoreceptors have been recorded from a member of the genus *Stenostomum*. A monoclonal antibody to chicken Pax6 protein cross-reacts with two cells anterior to the sensory ciliated pits of *Stenostomum virginianum*. We hope to use this molecular marker to identify these possibly-photoreceptive cells in other members of the genus *Stenostomum* and in other catenulid flatworms. Putative photoreceptors known as “refractile bodies” have been shown by others to be highly modified mitochondria, however their function is currently completely unknown in catenulid flatworms. In other flatworms, similarly modified mitochondria are known



form the lenses of the pigment-cup eyes. The monoclonal antibody SV2 uniquely labels the posterior portion of the cells containing the refractile bodies in *Stenostomum virginianum*, suggesting its use as a molecular marker for studies of the development of these enigmatic structures.

## REGULATION OF PROSTATE CANCER PROGRESSION BY THROMBOMODULIN

*Supported by a Winthrop University Research Council Grant, an NIH Grant from the National Center for Research Resources for SC-INBRE and the McKay Urology Endowment Fund*

**Christian Graves, 2008**  
**Jonathan Hathaway, 2005**

*Department of Biology*

*Faculty Mentors:*

*Laura Glasscock, Ph.D.*

*Shereen Mehrem*

*Chris Teigland, M.D.*

*(McKay Urology)*

Thrombomodulin (TM) is a receptor that is expressed by endothelial cells and prostate cancer (CaP) cells. The function of TM on endothelial cells is known, but the function of TM on CaP cells remains unknown. We investigated the ability of TM to regulate prostate tumor cell proliferation, invasion, and cell adhesion using monoclonal antibodies to TM's extracellular domains. Binding to epidermal growth factor-like (EGF) domains 4-6 of TM decreased the proliferation of PC-3 and DU-145 cells by 24% and 32% respectively. Binding to the lectin-like, EGF-like 2, EGF-like 4-6, EGF-like 5-6, and the serine/threonine rich domains of TM on PC-3 and DU-145 cells increased invasion by 23/15%, 12/25%, 19/15%, 20/18% and 31/31%, respectively. Since thrombin is the only known ligand of TM, we also determined if TM's involvement in tumor cell invasion is dependent on binding to thrombin. Thrombin did not affect tumor cell invasion by DU-145 or PC-3 cells, indicating that TM's regulation of prostate tumor cell invasion is independent of its ability to bind thrombin. Finally, we localized TM to the surface of PC-3 and DU-145 cells using fluorescent microscopy and determined that binding to the extracellular domains of TM can affect the tumor cells' ability to bind to each other. We concluded that TM plays a role in CaP progression by regulating the ability of tumor cells to proliferate, invade, and adhere to each other.

# NICKEL-CATALYZED CROSS-COUPLING REACTIONS OF POTASSIUM ARYLTRIFLUOROBORATES

*Supported by a Winthrop University Research Council Grant, 2007*

**Ben M. Driscoll, 2010**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*James M. Hanna Jr., Ph.D.*

The Suzuki cross-coupling reaction is the palladium-catalyzed coupling of an organo-boronic acid and an electrophile - usually an aryl halide - to form a biaryl, an important structural unit present in many pharmaceuticals, herbicides, light-emitting diodes, conducting polymers, and natural products. Potassium aryltrifluoroborates have several advantages over boronic acids as nucleophilic coupling partners in this reaction. They are easier to isolate and purify, they can be synthesized by using inexpensive materials, and they are stable to air and moisture. In addition, functional group transformations can be carried out on these compounds without affecting the nature of the carbon-boron bond. Although palladium-catalyzed cross-coupling reactions of aryl electrophiles with potassium aryltrifluoroborates are well known, a survey of the literature indicates that analogous nickel-catalyzed reactions are unknown at this time. Nickel catalysts have a cost advantage over palladium catalysts and they are known to catalyze the cross coupling of both aryl halides and aryl methanesulfonates with arylboronic acids, while palladium complexes have not been shown to catalyze this reaction. Aryl methanesulfonates are attractive derivatives of phenol as electrophilic partners in cross-coupling because they are less expensive, less toxic, and more stable than the corresponding aryl trifluoromethanesulfonates, the most common phenol-derived coupling partners. It is desirable, therefore, to determine if cross-coupling reactions using potassium aryltrifluoroborates can proceed under the influence of nickel catalysts. We began by studying the reaction of potassium p-tolyltrifluoroborate with bromobenzene in toluene catalyzed by bis(triphenylphosphine)nickel dichloride. While the corresponding boronic acid (p-tolylboronic acid) was able to effect 100% conversion of bromobenzene under these conditions, use of potassium p-tolyltrifluoroborate was completely ineffective, leading to 0% conversion of bromobenzene. Since previous researchers have shown that potassium aryltrifluoroborates must be converted to boronic acids or boronic esters under the reaction conditions in order to participate in the transmetalation step of the catalytic cycle, we attempted a two-step process in which the potassium p-tolyltrifluoroborate was initially heated with water and base and then reacted with bromobenzene. This gave a 5.5% conversion of bromobenzene - the first evidence that nickel complexes can mediate cross-coupling reactions involving potassium aryltrifluoroborates. This reaction is undergoing further development in our laboratory.

# TOTAL SYNTHESIS OF NOVEL SPHINGOSINE KINASE INHIBITOR, SKI-I

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE*

**Matt Wilson, 2009**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*T. Christian Grattan, Ph.D.*

Sphingolipids are a family of compounds that, in addition to being structural constituents of cell membranes, play key roles as signaling molecules. In particular two of these sphingolipid metabolites, ceramide and sphingosine 1-phosphate (S1P), have recently received considerable attention as integral mediators of cell death and survival. The regulator of the ceramide/S1P equilibrium is sphingosine kinase-1 which phosphorylates the sphingosine to form S1P. Sphingosine kinase-1 has been identified as an oncogene and is, therefore, of considerable interest in the treatment of cancer. To this end, a number of novel inhibitors of sphingosine kinase-1 have recently been identified and evaluated by Smith et al. These inhibitors show promising chemotherapeutic results in vitro, but are simply a starting point in the eventual optimization of in vivo activity. Work has recently begun, in collaboration with Smith's lab, on developing a synthetic route to produce one of these inhibitor compounds as a template molecule. A concise four-step synthesis is currently being investigated and the eventual product may then be compared to the original molecule through collaborative bioassay testing. The design and ultimate completion of this synthetic scheme will allow for numerous derivatives to be synthesized quickly and concisely in effort to increase the therapeutic effect of sphingosine kinase-1 inhibition.

# DESIGN & SYNTHESIS OF SKI-I DERIVATIVES FOR IMPROVED ORAL BIOAVAILABILITY

*Supported by an NIH Grant from the National Center for Research Resources for SC-INBRE*

**Erin White, 2009**

*Department of Chemistry,*

*Physics and Geology*

*Faculty Mentor:*

*T. Christian Grattan, Ph.D.*

Sphingolipids are a family of compounds that, in addition to being structural constituents of cell membranes, play key roles as signaling molecules. In particular two of these sphingolipid metabolites, ceramide and sphingosine 1-phosphate (S1P), have recently received considerable attention as integral mediators of cell death and survival. The regulator of the ceramide/S1P equilibrium is sphingosine kinase-1 which phosphorylates the sphingosine to form S1P. Sphingosine kinase-1 has been identified as an oncogene and is, therefore, of considerable interest in the treatment of cancer. To this end, a number of

novel inhibitors of sphingosine kinase-1 have recently been identified and evaluated by Smith et al. These inhibitors show promising chemotherapeutic results in vitro, but are simply a starting point in the eventual optimization of in vivo activity. A homology model of the sphingosine kinase-1 enzyme has been achieved to aid the evaluation of derivatives of the target structure to direct the synthetic efforts. These studies now allow us to evaluate the molecule for pharmacophoric regions that must be maintained for sustained therapeutic potency while identifying auxophoric regions for synthetic modification. Synthetic work has begun to study the impact of regional derivatizations directed towards improved oral bioavailability for these inhibitor compounds. All resulting compounds will be examined through collaborative bioassay testing to confirm the modeling results and direct additional synthetic study.

## PROJECT PSYC: SOUTH CAROLINA PSYCHOLOGICAL SCIENCE YOUTH CONNECTION

*Supported by an American Psychological Foundation Grant, 2007*

### **Jessica Hudgens, 2007**

*Department of Psychology*

*Faculty Mentors:*

*Timothy K. Daugherty, Ph.D.*

*Joe S. Prus, Ph.D.*

The South Carolina Psychological Science Youth Connection (Project pSyC) will help high school students firmly connect psychology, science, and self. Using a targeted campaign throughout the state, Project pSyC aims to clarify the role of psychological science in meeting community challenges. Talented high school students - and their teachers - will better understand not only psychology's empirical foundation but also its many career options. Project pSyC will employ a three-pronged approach to reaching high school students and high school teachers across the state: (1) development and distribution of a poster to key personnel at high schools, (2) encouragement of professional development through twelve TOPSS scholarships for teachers of pre-college psychology in the state, and (3) development of a comprehensive presentation regarding psychological science to the state's Junior Scholars program.

## AN HISTORIOGRAPHICAL EXAMINATION OF THE PEACE OF WESTPHALIA

### **Zachary Thurston, 2010**

As history tends to focus on wars and conflicts, it seemed fitting to focus instead on peace settlements and treaties. Thus, this paper examines the evolution of historiographical perspectives on the Peace of Westphalia, which concluded the Thirty Years' War in 1648.

*Department of History*  
*Faculty Mentor:*  
*Ginger Williams, Ph.D.*

Using a number of scholarly sources from as early as 1891 and as late as 2005, this paper examined the changing historiographical perspectives on such issues as state sovereignty created by the Peace of Westphalia; the objectives of the Conference of Westphalia and how they were accomplished; and to what extent the Peace of Westphalia actually created peace in Europe. The paper concludes that the Peace of Westphalia has transitioned from a historical issue to one examined primarily by those in international relations. In addition, while it was assumed in the late 19th and early 20th centuries that the Peace of Westphalia greatly impacted the development of state sovereignty, scholars began to reexamine the role of the Peace in the latter half of the 20th Century, ultimately rejecting the claim that the Peace of Westphalia was a watershed in the development of state sovereignty. Scholars asserted instead that state sovereignty was caused by an evolution which had been developing long before the Peace of Westphalia.



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