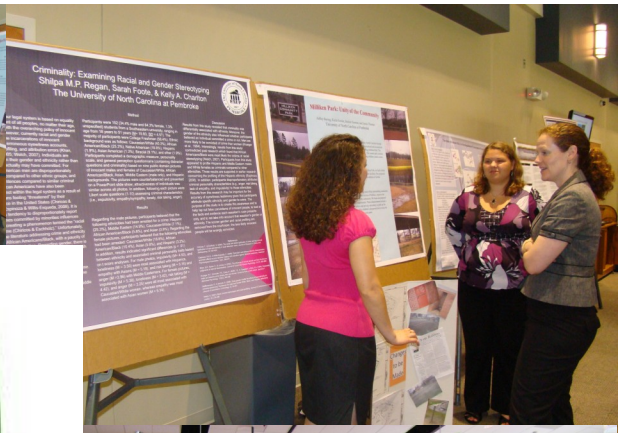
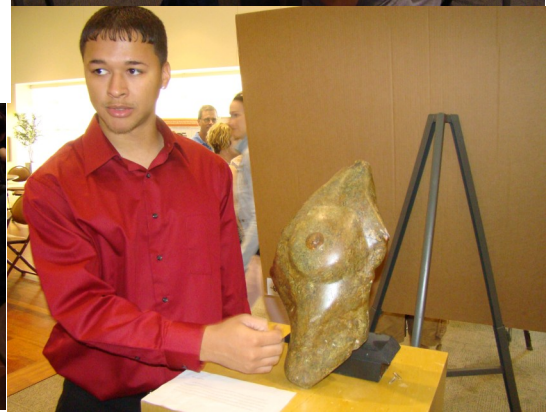
FIFTH ANNUAL UNC-PEMBROKE UNDERGRADUATE RESEARCH AND CREATIVITY SYMPOSIUM





APRIL 13TH, 2011

PROGRAM
WITH ABSTRACTS

Pembroke Undergraduate Research and Creativity Center
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April 13, 2011

Dear Students and Colleagues,

The UNC Pembroke Undergraduate Research and Creativity Center cordially welcomes you to the Fifth Annual PURC Symposium, a campus-wide celebration of undergraduate research and creative endeavors. We are pleased to include 94 presentations of scholarly ventures by approximately 128 students and 46 faculty mentors, representing 12 academic departments.

The mission of PURC is to stimulate, support, and promote inquiry, discovery, and creativity in scholarship and the arts through mentored research experiences with faculty and other regional, national, and international scholars and professionals. The Center facilitates and coordinates preparation in research skills necessary for professional fields and graduate study.

Participation in undergraduate research continues to grow at UNCP. During this academic year, at least 23 students presented research or creative works at state and national conferences. Please join us in acknowledging the accomplishments of UNCP students.

Contributions from ***Progress Energy***, our first corporate sponsor, help make this program possible. In particular, the prizes awarded for our student scholars are purchased with those funds. Progress Energy's commitment to higher education helps the PURC Center continue to provide UNCP students with extracurricular scholarly opportunities.

Many thanks go to all the students and faculty mentors, whose works are represented here today, to Lisa Smith, PURC's administrative assistant, to Jaki Tyson, for her help with the program, to the PURC advisory council for all of the hard work they have done to help bring this event to you, the Office of Academic Affairs, Provost Kitts, and Chancellor Carter. Thanks, also, to the Dr. Belinda Patterson, Assistant Dean of the East Carolina University Graduate School, and Ms. Johnna Watson, Associate Dean of the Graduate School at UNC Charlotte, for their participation in today's program.

It is our desire that the PURC Symposium will be a launching pad for student participation in research and formal presentation venues. So, please plan to take your works to local, regional, national, and international meetings.

Best wishes,

Lee Phillips, Ph.D.
Associate Director – PURC
Associate Professor of Geology

Jesse Peters, Ph.D.
Director – PURC
Dean, University Honors College

Pembroke Undergraduate Research and Creativity Symposium
April 13, 2011

Schedule of Events

9:00 – 9:10 Greetings – *with morning refresher*
Chancellor: Dr. Kyle Carter
Associate VC for Academic Affairs: Dr. William Gash
Director PURC Center: Dr. Jesse Peters

9:10 – 10:00 Importance of Undergraduate Scholarship when applying to Graduate School
Dr. Belinda Patterson, Assistant Dean, ECU Graduate School
Ms. Johnna Watson, Associate Dean, UNC Charlotte Graduate School

10:00 – 11:15 Morning Poster/Exhibit Session
Posters and Exhibits will be present all day. Authors will be present during this time.

11:45 – 1:00 Deli Lunch Service

11:15 – 12:15 Morning Oral Presentations
11:15 – 11:30 The Impact of Healthcare Programs on the Unemployed and Uninsured
Morris Cardenas
11:30 – 11:45 Absence of Morals and Ethics: Insider Trading
Erik Davis
11:45 – 12:00 Medical Tourism in Mexico and the Philippines: A SWOT Analysis
Nina Bianca Oviedo
12:00 – 12:15 Medical Tourism in the Eyes of Insurance Company
Yi Yang

12:30 – 1:45 Afternoon Poster Session
Posters and Exhibits will be present all day. Authors will be present during this time.

1:45 – 2:30 Afternoon Oral Presentations – 1
1:45 – 2:00 On the Electroluminescent Quantum Energy Relation
Austin Griffin
2:00 – 2:15 Exploring Percussion in Early Music
Jamie Patterson
2:15 – 2:30 Hate Crime Laws
Ashton Smith

2:30 – 2:45 Poster and Exhibit/Display Awards Presentation

2:45 – 3:30 Afternoon Oral Presentations – 2
2:45 – 3:00 To Share a Skin: The Truly Tragic Character of Edwidge Danticat's Breath, Eyes, Memory
Maria B. Hockaday
3:00 – 3:15 Honors Composition as a Site for Political Economic Literacy
Christopher Hudson, Mathew Wright and Seth Stewart
3:15 – 3:30 Post Secret: In Their Own Voices
Josie Torrence, Desiree Manello, Tony Spaulding, Karen Menzel, and Nicole Barnes

3:30 – 3:45 Closing Remarks and Oral Presentation Awards

Program Presenters

Ms. Johnna Watson

Johnna Watson is the Associate Dean of the Graduate School for Admissions and Enrollment Management and an Associate Graduate Faculty member at the University of North Carolina at Charlotte. In this capacity, Watson supports efforts to enroll and retain over 5,200 graduate students each year in more than 130 unique disciplinary programs.

A veteran educator, Watson has over twenty years experience working with enrollment management at North Carolina universities. A strong advocate of graduate education, Watson serves on numerous University and national committees, including a Public Policy Committee that addresses key legislative issues which potentially impact higher education. She co-teaches an undergraduate course on Graduate Educational Opportunities and regularly presents to audiences on the benefits of graduate education to the region, the state, the nation, and the world.

Watson earned the M.A. in Counseling from the University of North Carolina at Charlotte and the B.A. in Communication Studies from the University of North Carolina at Pembroke.

Dr. Belinda Patterson

Dr. Belinda Patterson earned the Doctor of Education degree in higher education leadership and M.A.Ed. in Counselor Education at East Carolina University. She has served as Assistant Dean of Graduate Studies at ECU since 2005. Before assuming this position, she served in various administrative roles with distance education programs and summer school at the University. Her experience prior to coming to ECU in 1996 includes serving as Assistant Dean, Admissions at College of the Albemarle and working in North Carolina and Virginia public schools as a guidance counselor.

PURCS Abstracts
2011

Poster / Exhibit Session

1. Soul Inside a Soul

Presenter(s): Abumohsen, Abir **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

This artwork emphasizes the beautiful relationship the mother holds with her child during pregnancy. By holding her hand to her chest, replicating that same pose of the child within her, the mother shows her understanding, love, and strong bonding to her child. The fabric that is wrapped around her body creates a sense of harmony and protection. This fabric is also used as a path that directs the viewers' eyes throughout the picture plane. Starting from the bottom, the fabric works its way up to bring our attention to the child, then to the mother's arm and face, then it settles on the mother's hair. The hair then falls down to the mother's waist to meet the child's face. This movement was created to keep the viewer engaged within the subject matter.

2. Circle

Presenter(s): Abumohsen, Abir **Faculty Advisor:** Mr. Adam Walls

Discipline: ***Art***

This sculpture is resemblance of God, human, and nature. The colors were chosen according to the three elements of water, fire, and earth, however, for the element wind I chose the curvilinear shape that holds everything together. The circles that are located at the bottom of the sculpture are resemblance of human beings, and the big circle at the top stands for God. The way the sculpture comes together explains the nature of the relationship between the components. Wind is the dominant element due to the fact that it can control water, fire, and the surface of the earth. Wind, in a way, is an interesting element because we cannot see, taste, or touch it, however we can feel it. In kind of the same way our relationship with God holds the same characteristic, based on faith rather than reason. Mysteriously, just like the bottom of the ocean, the human and God were painted blue. With an unknown end or beginning, they were shaped as a circle.

3. Effects of Trehalose on the Growth and Bioluminescence of the Phase I Variant of Photorhabdus luminescens

Presenter(s): Adams, Cameron B.
Floyd L. Inman, III
Faculty Advisor: Dr. Leonard Holmes

Discipline: ***Chemistry & Physics***

Photorhabdus luminescens is a Gram-negative, bioluminescent, entomopathogenic bacterium that lives in a symbiotic relationship with the soil-dwelling nematode, Heterorhabditis bacteriophora. P. luminescens is capable of phase variation, which allows for physiological adaptations to environmental conditions. This process of P. luminescens forms two distinctive phase variants, phase I and phase II. The

phase I variant is associated with nematode symbiosis and only found within the gut of the nematode. P. luminescens utilizes its nematode partner as a vector to infect insect hosts. Once inside, the phase I variant secretes toxins and enzymes that kill and bioconvert the insect into nutritional components. The phase II variant is isolated within the laboratory setting on standard culture media due to low stability of the phase I variant. Phenotypic characteristics of the phase I variant are used to differentiate it from phase II and include: extremely high levels of bioluminescence, secretion of insecticidal toxins and promotes nematode growth and development. An available carbohydrate source found within the insect is trehalose. Trehalose is referred to as the "blood sugar" of insects and is composed of two glucose molecules that are linked by an & #945; -1, 1 glucosidic bond. Since trehalose is found in abundance within the insect, we are interested to see if trehalose has any effect on the growth and bioluminescence of the phase I variant. To determine the effect of trehalose, basal media will be used as the baseline control and basal media supplemented with 2.5% trehalose will serve as the experiment. Bacterial growth will be assayed using a Spectronic 20D spectrophotometer at a wavelength of 600 nm. Bioluminescence will be measured in relative luminosity units (RLUs) utilizing a Turner Biosystems Modulus™ luminometer. Spectrophotometric and luminosity measurements will be plotted and graphed as they relate to time.

4. Two-Dimensional J-Resolved NMR Spectroscopy of Cobalt(III) Complexes Containing Ethylenediamine and Propylenediamine.

Presenter(s): Bacon, Natasha A. **Faculty Advisor:** Dr. Mark McClure

Discipline: ***Chemistry & Physics***

Two-Dimensional homonuclear J-resolved NMR spectroscopy was used to study the complexes [Co(tren)(en)]Cl3 and [Co(tren)(pn)]Cl3. For [Co(tren)(pn)]Cl3 several signals arising from the proplyenediamine occurred at 1.85-2.70 ppm. The signals arising from the tris(2-aminoethyl)amine occurred at 3.25-3.55 ppm; a range of 0.30 ppm. For [Co(tren)(en)]Cl3 one peak arising from the ethylenediamine occurred at 2.76-2.92 ppm . The signals arising from the tris(2-aminoethyl)amine occurred at 3.28-3.51 ppm; a range of 0.23 ppm. For the sake of comparison, the signals arising from the tris(2-aminoethyl)amine in the previously studied [Co(tren)(phen)]Cl3 occurred at 2.70 – 3.82 ppm, a range of 1.12 ppm. Clearly, the signals arising from the tris(2-aminoethyl)amine were spread into a much wider spectral width in the phenanthroline compound than in the ethylenediamine and proplyenediamine compounds.

5. Trace Analysis of Drug Residue on Clothing Fibers by Fourier Transform Infrared Spectrometry

Presenter(s): Bacon, Natasha A. **Faculty Advisor:** Dr. Meredith Storms
Ms. Shanna Harrelson

Discipline: ***Chemistry & Physics***

In this experiment, two tests were run on each sample. A marquis color test was used for the preliminary test. The marquis will change different colors based on the different drugs added to it. A Perkin Elmer Spectrum 65 Fourier Transform Infrared spectrometer with a diffuse reflectance-sampling accessory was used for the confirmation test. In this experiment, a single, solid color shirt was cut into several pieces and each piece was contaminated with different drug samples. The pieces of the shirt were contaminated with Aleve, Ibuprofen, Acetaminophen, Migraine Relief, and Oxycodone. The samples placed in marquis were collected directly from the clothing fibers. For all samples the shirt tested positive for a drug residue. The spectrums for each sample were compared to an FT-IR database that would generate a list of best-fit possibilities. Results may not have been accurate based on binders and

other contaminates in the pills. This is very similar to actual street drugs that may be "cut" in order for the drug dealers to make a profit off their products. In order to get more accurate results, further research would be needed in extraction methods that could remove binders and contaminates from samples.

6. Let's Switch: Gender Roles and Sexuality in Bram Stoker's *Dracula*

Presenter(s): Bannerman, Daria **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

In *Dracula* there is a suggestion that there is an acceptable sexuality and an unacceptable sexuality. The prescribed gender roles determine the assumption of a person's sexuality. In this novel, Mina is a nurturer, sweet, submissive, and faithful; however, she also possesses strength, determination, and she is very independent. She stands her ground, meaning she rarely questions who she is as a woman. Lucy is also submissive and sweet, very caring, but, when she becomes "undead", she turns into a wanton vampire, who is determined to get what she wants. Jonathan and Arthur have macho attitudes. (They try not to show emotions). They have professions that require them to demonstrate their strength. However, there are also instances when Arthur and Jonathan are crying, asking for help, and doubting what they believe to be the truth. To them, this is a sign of weakness. They allow their fears to be exposed when they would not ordinarily reveal them. They question their manhood.

I'm interested in researching the role that sexuality plays in this novel because it sparks my interest in the intersection between sexuality and gender roles. I am interested in hearing what the authors of these articles are publishing about sexuality and gender roles. What do they believe the consequences are if these men and women switch gender roles? How do the people in the Victorian Era perceive people who seem to cross these boundaries?

7. The Fliprap Arena Project

Presenter(s): Bayog, Francis Jayrick **Faculty Advisor:** Therese Rizzo

Discipline: ***English***

The Fliprap Arena Project (http://www.fliprap.com) is an international forum website designed by a team of UNCP students to showcase the creativity of artists, musicians, and writers. Representatives of the Fliprap Arena development team will present its website in a combination of poster and film. In this website, registered members can post their original work, participate in fun competitions that would test their wits and style, provide feedback for other members, discuss various issues, collaborate, express, educate, and learn from each other. The website is organized into several forum sections: Video City –where members can embed original videos; Poetry Castle- a workshop area for poets; The Gallery- a digital gallery for graphic artists and photographers; Battles Arenas where writers and rappers could exercise their craft in competitions such as poetry and rap battles. In our presentation, we will talk about the website's purpose, share our background, highlight its features, encourage the audience to participate in this creative community, and talk about our future possible projects that we are planning to feature in our site such as university tournaments, live rap battle video series, and more. The Fliprap Arena Project is not just a website; it is a growing interactive community of talented people that has a mission to bring creativity back to life, not just in the stage or online, but in educational settings, and

other avenues where artists could gather.

8. Physical Methods to Induce Changes in Plant Growth and Germination

Presenter(s): Blake, David
Rebecca Panter

Faculty Advisors: Dr. William Brandon
Dr. Maria Pereira

Discipline: ***Chemistry & Physics and Biology***

The idea that sound affects plant growth is not novel; however, ultrasound (sound of higher frequency than the typical human can hear: >20,000 Hz) has been shown to have dramatic effects on developmental physiology beyond that of audible frequencies. By growing plants in controlled environments, the effects of ultrasound on the germination rates and growth patterns can be monitored. Similar studies are performed using magnetic fields and combination therapies.

9. Crossing Over

Presenter(s): Brassard, Kimberly

Faculty Advisor: Dr. Michele Fazio

Discipline: ***English***

Christina Garcia's *Dreaming in Cuban* illuminates the powers of self-realization through the perils of motherhood, immigration, and change (both in the political and the familial spheres). Focusing on a Cuban/Cuban-American family and spanning the course of three generations of women, this "story" must be pieced together from information contributed from the narration of each generation. The novel's use of mosaic-type discourse (and its epistolary style within) creates many gaps in the reader's understanding of the central characters, particularly Celia (the matriarch of the family), whose story most obviously comes from letters she has written to her former lover Gustavo. These letters are the largest contributors in the gaps the story forms. The stories, narrating the lives of Celia's daughters (Felicia and Lourdes) and her grandchildren (Pilar, Luz, Milagro, and Ivanito), give contrasting impressions of Celia while simultaneously explaining away confusion created by the letters Celia writes. These letters help to close the gap in the power dynamic of Celia's life, and allow her to reclaim the power denied her by the course her life takes (largely stemming from the jealousy of her husband Jorge). As these letters are essentially written to herself, through them Celia feels not only the power of telling her story, but also the power derived from the act of writing to herself about herself. The gaps in the novel created by this chosen discourse work in tandem with the themes that are apparent in the novel, including the physical and emotional distance between Celia and her family, and the intergenerational connections (or lack thereof). The letters Celia writes contribute to an understanding of how immigration and assimilation shape the family's fragmentation and, ultimately, lead to a recovery of cultural history.

10. The Construct of Male and Female in Victorian England and its relation to *Dracula*

Presenter(s): Brett, Leslie

Faculty Advisor: Dr. Susan Cannata

Discipline: ***English***

The idea of what male and female are is a function and is directly related to the time period in which those people are located in; it is a construct of the ideology of that time and culture. This is how gender

critics give context and meaning to why people of each gender were expected to take on the roles that they were given. In *Dracula*, there are numerous instances of males taking on the traditional roles of females and females acting more like how the males were expected to behave. I plan on looking into how men and women were expected to behave. It interests me to find sources from the Victorian time period such as books and publications that were made to further the ideals that the culture held dear including literature girls would have received while in a finishing school, or what would have been being taught to young men as to the proper way to act.

By looking at these books and publications, I hope to gain knowledge as to how men and women were expected to act, and what the consequences of acting outside of that role would be. Applying the knowledge gained through this research, I plan on looking at *Dracula* and seeing how the characters played the role of the opposite gender, and what it would have meant to that person to have stepped out of their traditional role.

11. Characterization of the Orangeburg Scarp Boundary by Mapping Density and Distribution of Carolina Bays in Hoke County, North Carolina

Presenter(s): Bryant, Laurie
Anna L. Sanford

Faculty Advisor: Dr. Lee Phillips

Discipline: ***Art***

Carolina Bays decrease in number and disappear entirely as they approach the northernmost recognized portion of the Orangeburg Scarp, a prominent wave-cut paleoshoreline. The Orangeburg Scarp, whose type locality is in South Carolina, is interpreted to have formed during the Pliocene, while Carolina Bays are the result of Pleistocene paleoenvironmental conditions. This project maps the density, distribution and axial orientation of Carolina Bays in Hoke County, North Carolina using orthophotography, LiDAR and infrared imagery. The long range goals of this project include combining these data with other in south-central NC to further elucidate the age(s) and origin of Carolina Bays. Current data are used to more accurately map the northern extent of the, now east-west trending, Orangeburg Scarp in Hoke County. The orientations of the Carolina Bays in the Hoke County area are generally consistent with those in, adjacent, Robeson and Scotland Counties. The density of Bays in southern Hoke County is similar to northern Robeson County, but diminishes to the west and north, nearing the Orangeburg Scarp.

12. Solenopsis invicta (red imported fire ant): Colony Density and Distribution in Clay-based Carolina Bays

Presenter(s): Bublitz, Matthew
Chris Spencer

Faculty Advisor: Dr. Lisa Kelly

Discipline: ***Biology***

The invasive red imported fire ant (Solenopsis invicta) is one of the most important pest species in the United States, causing extensive ecological harm. While typically associated with disturbance habitats, we report the species from two relatively pristine, clay-based Carolina bays --- Antioch and Goose Pond Bays, North Carolina. Owned by The Nature Conservancy, these bays support a rich biota, rare plants and animals, a dense herbaceous groundcover, and unique savanna habitat dominated by pond cypress (Taxodium ascendens). During summer 2010, we used line transects to determine colony density and distribution of S. invicta within each bay. Colony densities were similar in both bays (means of 56 and 52 mounds ha-1), yet smaller than densities in other habitats in the southeastern United States. Colonies

were distributed throughout the bays, albeit uncommon in densely wooded areas. Mound dimensions were intermediate to those for monogyne and polygyne social forms in Florida. Thus, we could not conclude which social form occurs within our study bays. Most mounds were located next to objects or atop logs, which may allow for the species to persist in the bays even during prolonged winter flooding. The species' effects on native fauna and flora have yet to be determined.

13. Faces of Homelessness

Presenter(s): Burden, Her'rice
Kaci Lynne Hunt
Talitha Cambridge
Mallory McAden

Faculty Advisor: Dr. Tulla Lightfoot

Discipline: ***Art***

Working with Gayle Fernandez of the Robeson County Community Development Corporation, students created images for a luncheon on the topic of Homelessness. Images were used as posters for the luncheon, but may also be displayed around the community and may eventually be made into a calendar to inform the community about Homelessness.

Student were given the topic and then had to research the different situations resulting in people becoming homeless. Students then staged and created scenarios out in the community that they could photograph. They then used PhotoShop software to manipulate photographs to make them visually interesting, and make the viewer sympathetic to each situation.

The luncheon was attended by politicians and civic leaders. The posters added the "human" touch and explained how Homelessness can affect everyone not just in this community, but in every community.

14. "The Illogical Truth: Redefining Culture in Bram Stoker's *Dracula"*

Presenter(s): Chavis, Adrienne M.

Faculty Advisor: Dr. Susan Cannata

Discipline: ***English***

How many times have we as human beings questioned "What is real" or "What is truth"? Many times our answer lies inherently in what we have been taught or the culture we have been exposed to. This is quite the case with some of the main characters found in Bram Stoker's *Dracula*. When the characters are first exposed to the idea or notion of vampires, it is a matter of complete absurdity and shame to each individual. They view their discovery as incomprehensible because of the lack of logic and practicality they were so accustomed to. So ingrained was this notion of logic that they would rather deem themselves flirting with insanity, instead of facing an idea that, though seemingly illogical, was clearly a truth.

My question becomes, what is it that drives these characters to question their own perceptions? Is it in fact a matter of culture against culture, and if so, what was Bram Stoker hoping to achieve by placing this conflict in his novel? As can be seen, clearly a transformation came about in each of these characters; for in the end, what they viewed as ridiculous, became the very essence of what saved their lives. Was this then what Stoker wanted to bring about: a realization of each culture, and how, though different, were in fact very much alike?

My research would involve taking a closer look at the various complexities and norms surrounding the Western culture known to the majority of these characters. Exploring this notion would further aid me in better determining Stoker's purpose in placing the conflict of logic vs. truth throughout the novel, and how it ultimately impacted the transformation of each character.

15. Positive Modulation of Glutamatergic Signaling and Lysosomal Responses in the Hippocampus: Potential Strategies to Offset Learning and Memory Deficits in Mucopolysaccharidoses

Presenter(s): Cooper, Joanna
Hollie B. Young-Oxendine[1]

Faculty Advisor: Dr. Ben Bahr
Meagan Wisniewski[1]
Ana Charalambides[1]
Matthew G. Varga[2]
Jeannie Hwang[1,2]
Gary A. Rogers[3]

Discipline: ***Biology***

[1]Biotechnology Research and Training Center, University of North Carolina-Pembroke, Pembroke, North Carolina

[2]Department of Pharmaceutical Sciences and the Neurosciences Program, University of Connecticut, Storrs, Connecticut

[3]Cortex Pharmaceuticals Inc., Irvine, California

Over 50 different genetic diseases, termed lysosomal storage disorders (LSDs), involve defects in lysosomal function and produce insidious effects with a time of onset ranging from *in utero* to 25 years. Mucopolysaccharidosis VII (MPS VII) is deficient in β-glucuronidase (GUS), an enzyme that breaks down glycosaminoglycans (GAGs). We are studying a mouse model of MPS VII that, due to the lack of GUS, results in neurons and glia accumulating undegraded GAGs and the associated interference of brain function including hippocampus-dependent spatial learning (Barnes Maze). One potential avenue to offset the behavioral deficit entails Ampakine-mediated enhancement of select glutamatergic signaling largely responsible for hippocampal plasticity. In hippocampal slice cultures, we conducted initial characterization of ***2,1,3-benzoxadiazol-6-yl(piperidin-1-yl)methanone (CX691)***, an Ampakine found to improve memory in rats and humans. The drug enhanced EPSP amplitude of the hippocampal waveform with an EC_{50} of 3 μM, thus much more potent as compared to its half-width EC_{50} of >500 μM. In addition, CX691 appears to promote repair responses through the AMPA receptor-MAPK axis. Neuroprotection was tested in slice cultures subjected to excitotoxin exposure that produced cytoskeletal and synaptic deterioration. When 0.5 μM CX691 was added post-insult, calpain-mediated cytoskeletal damage was reduced, synaptic markers were well maintained, and cell death was not evident. A second strategy involves a positive modulator of the lysosomal system, Z-L-phenylalanyl-L-alanyl-diazomethylketone (PADK), which enhances enzyme level and trafficking. Systemic PADK injections in AD transgenic mice caused 3-8-fold increases in the lysosomal enzyme cathepsin B and 3-10-fold increases in the enzyme's activity in lysosomal fractions, while neprilysin and insulin-degrading enzyme remained unchanged. The lysosomal modulation was found to reduce protein accumulation events (Aβ), promote synaptic maintenance, and eliminate behavioral deficits. Such development of disparate avenues to offset functional compromise in the brain will lead to important comparative analyses in MPS VII mice, and a novel combination therapy with first-in-class drugs may be a promising future goal.

16. Simulation of Kidney Stones

Presenter(s): Correa, Cynthia
Armando Corona

Faculty Advisor: Dr. Siva Mandjiny

Discipline: ***Chemistry & Physics***

Kidney stone is a very common problem in Robeson County. The composition of stones is mainly due to the presence of calcium oxalate or calcium phosphate or calcium urate or the combination of one or the other. In this project, the kidney stone is simulated by various compositions of oxalates in the presence of phosphates. The method used to analyze the oxalates is by redox titration by KMnO4. This method helps in determining the percentage composition of oxalates in the presence of phosphates. The results obtained by redox titration is compared with microprobe analysis.

17. Adapting To and Accessing The Needs of Non Traditional Students

Presenter(s): Cox, Lonnie
Tre Howard
Ryan Wise
Kim Stepp
Kimberly Brassard

Faculty Advisor: Dr. Teagan Decker

Discipline: **English—*University Writing Center***

Our research project uses interviews as well as surveys to identify the writing practices and writing support needs of non-traditional students in our writing center. We arrived at this topic by first conducting an open discussion among our staff about what we might productively research in our center. We then worked collaboratively to identify research directions, research methods, and research questions. The tutors brainstormed until settling on our particular project. Our methods of research once the study begins include group discussion sessions and personal interviews in order to gain a better understand of a non-traditional student's life as a writer readjusting to the academic world. Our PURC poster discussed our project and shows results from our survey questions. These results show that some of the assumptions we had about NT students are true, while some are not. With a better understanding of the writing practices and needs of NT students, we will better be able to meet these needs in the writing center.

18. Leadership Motivation and Followership Framework

Presenter(s): Crews, Adam

Faculty Advisor: Dr. Eric Dent

Discipline: ***Business***

The motivation a leader uses varies in different ways. Whether this leader can use 5 different types of power: expert, referent, legitimate, coercive, and reward to lead his followers to completing task the group is given. Also the followers play a role in influencing a leader which people may not know. So what I will be showing is the framework of how followers and leaders interact and also the situation that intertwines the two.

19. A Cross-Cultural Examination of Gender Roles in American Children

Presenter(s): Davis, Daniel
Stephanie Contestable-Grudier
Elizabeth Metzger
Sara Pack

Faculty Advisor: Dr. Beverly King

Discipline: ***Psychology***

For this project, over ten children under the age of ten were interviewed and asked a series of questions on the role of gender in American society. Some of these questions included “What colors do boys/girls wear?” “Would you play with a little boy in a dress?” and “Are boys and girls different?” The answers to these questions were recorded and analyzed in respect to the child's age, gender, and other cultural factors. We expect to find that culture is strongly influential and that gender roles are deeply engendered at an early age.

20. Qualitative and Quantitative Analysis of Soil Microorganisms from a Biochar Farm in Bladen County, North Carolina over Three Crop Seasons

Presenter(s): Edwards, Stephanie

Faculty Advisor: Dr. Marilu Santos

Discipline: ***Biology***

Biochar is a charcoal-like, natural soil amendment that is produced by heating agricultural and forestry wastes without oxygen in a process called pyrolysis. Many studies have shown a correlation between the qualitative and quantitative composition of the microbial population and the abiotic and biotic characteristics of the soil. The present study was to determine the effect of biochar on the number and types of microbial population of the soil from three separate crop cycles at the North Carolina Farm Center (NCFC) by standard plate count (SPC). We hypothesized that biochar would increase the bacterial population in the soil. Soil samples were collected from sixteen test plots maintained at the NCFC in Bladen County, North Carolina in March (wheat), June (harvested wheat), and September (soybean) 2010. The soil samples were pour-plated on plate count agar (PCA) after appropriate serial dilution. Incubations were done at room temperature in ambient, 5% CO_2, microaerophilic, and anaerobic conditions. The isolates were also characterized morphologically and biochemically using Gram staining and a variety of culture media, including Trypticase Soy Agar with 5% Sheep's Blood and Eosin Methylene Blue media. Statistical analysis of the SPC from the experimental plots shows that biochar does not have an effect on the number of bacteria in the soil. The SPC from plots with biochar and without fertilizer did not show any statistical difference from the SPC of plots without biochar or fertilizer. The mean (± standard error) SPC for facultative aerobes was 181.1 x 106 ± 16.1 x 106 cells/ gram, 27.5 x 106 ± 2.6 x 106 cells/gram for capnophiles, 12.3 x 105 ± 1.2 x 105 cells/gram for anaerobes, and 23.6 x 106 ± 1.7 x 106 cells/gram for microaerophiles. However, phenol and ampicillin resistance were rampant among bacteria, from 74% and 46% of the total population, respectively.

21. Toward the Development of a Microscale Apparatus for Infrared Spectroelectrochemistry

Presenter(s): Ellerbe, Joshua **Faculty Advisor:** Dr. Paul Flowers

Discipline: ***Chemistry***

Chemical analysis of very small amounts of matter is an increasingly important aspect of many areas of scientific investigation. These analyses require "microchemical" techniques that are suitable for various applications in which samples are either inherently small, of limited availability due to scarcity or expense, or hazardous enough to pose problems in personnel exposure and safe disposal. Several vendors offer apparatus for making ultraviolet, visible, and near infrared spectral measurements on samples with volumes as low as one microliter. And though only a few vendors offer apparatus for making electrochemical measurements on small samples (volumes on the order of a few hundred microliters), there is considerable ongoing research directed towards the development and application of electrochemical cells and sensors, particularly biosensors, that can accommodate very small sample volumes. However, there have been comparably fewer reports of microscale apparatus permitting simultaneous electrochemical and spectral measurements, so-called "spectroelectrochemical" (SEC) techniques. This poster summarizes the results of our early efforts in designing, constructing and characterizing an apparatus that will permit infrared SEC analysis of microscale samples that will accommodate a significantly smaller sample volume of at least 10X to 100X smaller. Support of this research by the UNCP RISE Program, funded by the National Institutes of Health, and the UNCP Chemistry & Physics Department is gratefully acknowledged.

22. Gaemul

Presenter(s): Ellis, Allison **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

Etching
The idea behind this imaginable creature was designed using the exquisite corpse method in a way that each section interacts with another. The original drawing had three separate sections. I drew the first section and I assigned the other sections to two of my friends. The subject of this project was bestiary however neither one of us knew what the other was drawing, so it was completely spontaneous. After revealing the final drawing, the beast was not yet complete. Each section had to be involved with another, so I intertwined them making "Gaemul" one mysterious monster that was unidentifiable. Finally, the beast led the viewer's eye in and out and all around the picture plane. I achieved this in ways such as using diagonal lines to create movement and different proportions of the figures to create a sense of space. Afterwards, on a zinc plate ,I used a variety of etching tools to create the monster. Then it was etched in acid several times to make it possible to get thin, detailed lines and shading that helped to enhance and define depth in the images in "Gaemul" in a profound way.

23. Cross-Cultural Relationship Comparisons

Presenter(s): Faulkner, Nicholas
Ashlee Doughty
Jessica Tulud
Chris Williamson

Faculty Advisor: Dr. Beverly King

Discipline: ***Psychology***

A relationship is defined as a state involving mutual dealings between people or parties or countries. Culture, a particular society at a particular time and place, determines how people are supposed to interact. Our poster uses interviews, both personal and through email with individuals from different cultural backgrounds that will be used to compare and contrast relationships with family, friends, strangers, and romantic partners and how those relationships alter from culture to culture.

24. Inhibition of Microsomal Triglyceride Transfer Protein by RNA Interference in Drosophila S2 Cells

Presenter(s): Faulkner, Nicholas **Faculty Advisor:** Dr. Jeremy Sellers

Discipline: ***Biology***

A major source of crop destruction worldwide is the pests, particularly insects, which consume them. As such, the overarching goal of our research is to explore the potential use of RNA interference in developing species-targeted insecticides. In our experiments, we use Drosophila melanogaster as a model for all insects, which share many similarities in the lipid-transfer pathways, yet are divergent enough to allow for species specificity. The bulk of lipid transport in the hemolymph of insects is facilitated by lipoproteins, which package and transport neutral lipids from dietary or stored sources to the peripheral tissues to be used in ATP generation. The lipoproteins we have focused on are apolipophorin II/I (apoLpII/I) containing particles, of which there are at least two main requirements for formation: apoLpII/I and microsomal transfer triglyceride protein (MTP). While the role of MTP in apoLpII/I containing lipoprotein biogenesis is not fully defined, it is suggested to have a similar role as mammalian MTP in promoting the acquisition and filling of apoLpII/I with lipids for transport through the hemolymph. In this work, we have explored the inhibition of MTP expression by RNA interference, with the ultimate goal of examining its effect on lipoprotein biogenesis and the phenotype this confers on whole flies. This project specifically involved the construction and screening of an anti-MTP RNA that was capable of specifically knocking down the expression of MTP mRNA by >95% in drosophila S2 cells.

25. A Living Culture

Presenter(s): Fetch, Andrew
Perry Holden
Diana Walsh
Delorian Miller

Faculty Advisor: Dr. Michele Fazio

Discipline: ***English***

Oral history has played an important role in enabling culture and tradition to be passed from generation to generation. As contemporary ethnic literature shows, cultural identity is shaped by class, race, gender, place, and community. This service-learning project will use oral history obtained from elder members of the Lumbee tribe who regularly attend weekly meetings at the Pembroke Senior Citizen Center to explore the cultural bonds that impact individual and group identity. Some questions this project addresses will reveal a deeper understanding of the importance of place: Why did some remain? Why did others leave and return? Their stories show a range of experiences impacted by class and gender, drawing a correlation between assimilation and other struggles faced in novels such as Louise Erdrich's Love Medicine and Cristina Garcia's Dreaming in Cuban. More importantly, the recording of individual voices and stories will preserve the past and present, enabling members of the Lumbee tribe and surrounding Pembroke community to pass on a living history to future generations.

26. Naughty or Nice

Presenter(s): Fillhart, Amber **Faculty Advisor:** Mr. Adam Walls

Discipline: ***Art***

I have always had an interest in fantasy characters. These characters have appeared numerous times in the doodles and sketches on the corners of hand written pages and notes taken during classes. In the sculpture titled "Naughty or Nice" I have created a three dimensional representation of one of these fantasy characters.

The construction of this piece started out with putting objects together to make a form. The main hollow sphere was the beginning of the process followed up by the arms and tail. I made use of ball bearings, steel rod, and steel rings to form the appendages. I used Bondo (a body filler used commonly in automotive repair shops) to make the curves on the connecting pieces. To create the bends I needed for the tail I used a torch to heat steel rod and bent the angles. Coats of primer were painted on, followed by the top coat of red to complete the piece. I chose the color red because, for me, red has always been linked with the concept of evil. The fact that this does not look intimidating makes the viewer think about how it can be both naughty and nice.

It was important for me that this piece should give off a sense that it can be both evil and cute at the same time. Creating a cute likable sculpture was also my purpose in the devil. Devils are not likeable creatures, but the simplicity of the forms and shapes give it a welcoming gesture. This piece is formally made to show how welds can be hidden; showing two opposite emotional qualities in a single piece, and the use of rhythm through repetition. The repetition is shown through the bends in the steel and the use of spheres and pointed objects. There are two bends in the tail, two horns, and two hands and arms. This makes the piece symmetrical but when looking at the offset of the tail this changes the perfect symmetry but continues with the rhythm. Rhythm is then formed by the repetition these shapes make.

27. The New Orleans Bus

Presenter(s): Fisher, John **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

Capturing the thrill of an everyday moment from my youth was my intention in this woodcut print of a municipal bus in New Orleans. The challenge was to transform the mundane bus into more than a common object. Although some people may associate a city bus with an image of poverty, for me it was a gateway to adventure that only cost a couple of quarters. As an artist, I had to make decisions about how to convince the viewer to see this bus as I saw it.

In order to convey my feelings, I had to give this bus extraordinary visual attributes that are recognizable to most viewers. The means I used to draw attention to what I wanted was colored air and reflections on glass and water. The most striking highlight is the iridescent halo of moisture around the bus. This halo gives the impression that the bus is somehow energized or heavenly. Visible behind all the glass is a glowing fluorescent box of cool blue air. The hue of blue ink I chose for the glass has a cooler "temperature" than the warmer blue-greens in the rest of the picture. This isolates the interior atmosphere inside the bus and effectively conveys the inviting feel of air-conditioning on a sweltering day. By coloring the air blue, I've lowered the temperature. The blueness behind the windows is punctuated by reflections on the glass, suggestions of passengers and deeper shadow areas that suggest a volumetric space within the bus. No individual passenger's face steals our attention from the bus as a

whole. Reflections flit across the glass and the water that flows in the street. The reflections on water allow me to lay in some painterly, fluid and up-beat strokes of my carving chisel.

Three-dimensional compositions that invite the viewer to step right into them are my forte. I used two-point perspective to build the solid rectangular shapes in this picture and atmospheric perspective to help them advance or recede from view. The solid forms and surfaces are given textures such as flowing water, shadows, reflections on glass, and stainless steel. Chisel-marks are clearly visible and are integrated into the textures. Within the dimensional space the viewer is free to roam around in the pleasant moment of a long ago New Orleans evening.

28. Dracula: Stokers women and the ideal Victorian woman

Presenter(s): Frink, Lauren **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

For centuries the roles of men and women have been controlled by the norms of society. During the Victorian era, middle-class women were presumed to be temples of love and purity. Their two primary roles were to get married and take care of the house. Women of this time period were not allowed to vote, sue, or own property. If a woman of this time wanted a job the only one that was acceptable was that of a teacher. Men on the other hand were expected to provide the income for the household and were viewed as the protectors. They were the ones with the jobs, money, respect and power. In the Victorian Era women were stereotyped as weak and submissive, ones who needed the protection of men. Bram Stoker sheds a new light on the roles of men and women in his novel *Dracula.* Stoker's women are portrayed as intellectual beings that do not get the recognition they deserve, yet, without them, Dracula may have never been destroyed. They are viewed by readers as strong and courageous. My research involves discovering women's roles and the stereotypes during the Victorian era and the ways Stoker changes them in his novel *Dracula.*

29. Strawberry Composure

Presenter(s): Graham, Cortney **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

Strawberry Composure was created using powdered, compressed, and vine charcoal on drawing paper. My mentor for the work was Professor Brandon Sanderson. After covering the paper with powdered charcoal I first sketched out the leaf that is seen in the background and then drew the outline of the strawberries that are in the foreground. Once the outline for the entire piece was finished and I felt as if it was adequately made, I began to add shading and highlights to the artwork to give it a sense of space, texture, movement, and harmony. I ensured that the charcoal remained on the paper and would not rub off by applying a fixative spray to the finished piece.
I was inspired to make this artwork by the song entitled, "Strawberry Fields Forever", by the '60's-'70's rock band The Beatles. In listening to the song's melody and lyrics I become transfixed by the notion that there is a place, whether real or not, which is completely carefree and tranquil. In my piece I tried to capture this notion of perpetual serenity in an environment that one not only enjoys but also finds relaxing and worry free. Though the strawberries were the most important part of the piece, I felt that the added attention to the detail in the leaf would help create more texture and dimensionality.

30. Medieval Iconography and Symbolism

Presenter(s): Green, Brittany **Faculty Advisor:** Dr. Valerie Austin

Discipline: ***Music***

Understanding medieval iconography is imperative to understanding the context of music during the medieval period. The purpose of this research presentation is to discover, analyze, and present important characteristics of medieval art that help define music of the time. This includes minor details in paintings such as how an instrument is held, how the person playing the instrument is portrayed (i.e. poor or lesser class person versus someone who looks like nobility), facial expressions, and background settings. Issues of realism and accuracy in iconography will also be examined, In observing these details, one can determine what types of music and instruments were considered demonic, low-class, holy, noble, etc. This information is important in understanding medieval music in its historical context.

31. Integrated Approach to Amplitude Modulated Laser Design

Presenter(s): Griffin, Austin **Faculty Advisor:** Dr. William Brandon

Discipline: ***Chemistry & Physics***

Based on the measured operating characteristics of a 656nm (red) laser diode a high fidelity laser-based amplitude modulator system was designed and built for audio frequency signal transmission and reproduction. The project clearly demonstrates aspects of both trans-conductance and trans-impedance amplifier design and hence lends itself quite naturally in the evolution of hands-on, tangible optoelectronic projects that can easily be extended to include state of the art technology.

32. Literature Unlocks Potential

Presenter(s): Hall, Justin
Priscilla Sheen
Faculty Advisor: Dr. Michele Fazio

Discipline: ***English***

We chose to mentor at-risk high school students so that we could assist them in making good decisions, create goals, and develop their confidence to further themselves in life. We hope to achieve these goals by conducting writing and literature workshops that will help them explore who they are and who they want to become. We will be volunteering through Sacred Pathways, a non-profit organization dedicated to helping the community, and they will be guiding us on how to mentor, as well as assisting us with our writing workshops.

We understand that our expectations are high, and we anticipate that students may be hesitant or even reject our help, but hopefully, with persistence and determination, we will be able to connect with all the students and get them to the point where they want to participate in the activities and open up to us about their dreams and goals. We want the students to take what they learned about themselves in the workshop and use it to propel themselves toward their goals. As long as the students know that they have limitless potential and can do whatever they put their minds to, then we will have accomplished something special.

33. Music's Effect on Greek Mythology

Presenter(s): Herring, Rachel
Christian Pierce

Faculty Advisor: Dr. Valerie Austin

Discipline: ***Music***

The purpose of this presentation is to evaluate the effects that music had upon Greek Mythology. Mythological characters such as the muses, Pan and Syrinx, Linus, and Apollo versus Dionysius help to illustrate the permanent effects that music impressed upon Greek culture. These mythological characters were admired by Greek society because they were believed to inspire prosperity as well as making an individual seem more cultured. Thus, increasing that individual's worth in society. Music's role in Greek Mythology is important to understanding the value that was placed on the arts in that culture around 700 BC.

34. Ominous Machinations

Presenter(s): Hooker, Kasey

Faculty Advisor: Mr. Brandon Sanderson

Discipline: ***Art***

In my artwork I always try to find a way to make the viewer wonder or ask questions about something they may already know or be familiar with. In this way, I try to add a sense of mystery to my work as well as being somewhat surreal at times. I often use human or other organic elements combined with mechanical or technological elements in a way as to create something that seems unnatural yet still familiar. Most of my work is fairly dark, usually in color but sometimes in content as well. The lack of light focuses the viewer on exactly what I want and leaves them wondering about the parts they cannot see.

This print is a 3-color woodcut. I chose to keep much of the image very dark and most of the colors that are present as cool colors, in order to make the scene foreboding and imposing. The people in these tubes of fluid are slowly being dissolved, a slow and torturous death. As such, the image is meant to be grotesque. The image symbolizes technology being the downfall of man. This can be observed in the real world every day, to a much lesser degree, with people being entirely dependent on cell phones and computers. People get into car crashes from paying more attention to their phone than the road and if a computer network in a business goes down, it can bring all productivity to a halt.

35. Ionic Liquid Media for the Electrolysis of Carbon Dioxide: Converting Metabolic Waste to Rocket Fuel

Presenter(s): Iluka, Cilia

Faculty Advisor: Dr. Paul Flowers

Discipline: ***Chemistry***

Environmental control and life support systems are required elements of any habitats or vehicles used for manned exploration space. Among the critical functions of these systems is the removal of the metabolic waste gas, carbon dioxide, in order to maintain its concentration at a safe level within the habitat. Carbon dioxide removal is typically achieved by sorption methods, either chemical (chemisorption) or physical (physisorption). A considerable amount of prior and on-going research is focused on the use of ionic liquids as media for effective and reversible carbon dioxide sorption. Preliminary studies in the author's lab indicates that in addition, some of these ionic liquids

may be suitable solvent for the electrolysis of carbon dioxide, potentially resulting in the production of light carbon-based fuels. This poster describes recent experimental investigations of the fundamental electrochemical properties of selected alkylammonium-based ionic liquids, with the aim of assessing the suitability of these media for the dissolution and electrolysis of carbon dioxide. Support of this research by the UNCP Chemistry & Physics Department and NASA is gratefully acknowledged.

36. Taken out of Con-techs

Presenter(s): Ingram, Timothy **Faculty Advisor:** Ms. Janette K. Hopper

Discipline: ***Art***

The piece I present to you helped in developing my use of line and shading using graphite and to develop significant content. "Taken out of Con-techs" was drawn independently while I was taking Figure Drawing, and is concentrated in content. "Taken out of Con-techs" represents figures in a technological environment. This piece allows the viewer to recognize the power and explore the effects of technology in today's society in opposition to Christ's teachings because we depend too much on technology. We seem to glorify ourselves through our inventions while ignoring the power that technology has gained over us. As a result of industrialization and capitalism, American society itself became a commodity machine, reducing the significance of moral power. My studies of art history have also inspired the content of this piece as art tells the stories of empires past and present. The quest for globalization has been realized. What is next?

37. Biochemical Profiling of the Bacterial Honey Bee Pathogen, Paenibacillus larvae

Presenter(s): Inman, III, Floyd L. **Faculty Advisor:** Dr. Len Holmes

Discipline: ***Chemistry & Physics***

Paenibacillus larvae is a Gram-positive, endospore forming bacterium that is pathogenic to the honey bee, Apis mellifera. P. larvae is the etiological agent that causes the infectious honey bee disease known as American Foulbrood (AFB). The infective form of the bacteria is the endospore and once the endospore is ingested by the honey bee larva, it germinates into the vegetative form and proliferates within the midgut of the larvae. As bacterial numbers greatly increase, the bacteria burst through the lining of the midgut and into the hemolymph causing immediate larval death. Currently, there are no field kits available to for the immediate diagnosis of AFB infected hives. To identify these infected hives, samples must be sent to a reference laboratory for biochemical identification. Biochemical identification profiles contain panels of tests that are performed to evaluate bacterial metabolism of different substrates. A biochemical identification profile for P. larvae has been initiated and includes a battery of biochemical tests ranging from carbohydrate fermentation to nitrate reduction and motility to staining techniques. These tests will be utilized to develop field kits that can help beekeepers correctly diagnose AFB infected hives.

38. Transformation of Escherichia coli DH10B Utilizing Electroporation

Presenter(s): Inman, III, Floyd L.
Nathaniel Kingsbury
Natasha Bacon
Hancy Barnes

Faculty Advisor: Dr. Len Holmes

Discipline: ***Chemistry & Physics***

Escherichia coli DH10B is a Gram-negative, facultative, enteric bacterial strain that is commonly used in molecular biology for many different applications. In this project, E. coli DH10B is used as the host strain for the amplification of the plasmid vector, pGREEN. The pGREEN plasmid contains an origin of replication and two genes that encode for green fluorescent protein (GFP) and ampicillin resistance (ampr). The size of pGREEN is 4,528 base pairs long and has 7 unique restriction sites. Electroporation is a mechanical method that utilizes a large electrical pulse to create pores within the cellular membrane to introduce molecules into the cell. This method of transforming cells is known as electrotransformation and is approximately ten times more effective than chemical transformations. Prior to transformation, colonies of E. coli DH10B were isolated from a primary stock plate supplied by the supplier and a single colony was used to initiate an overnight culture. Mid-log cells (O.D.600 = 0.4 - 0.5) were obtained the next day using the prepared overnight culture from previously. Mid-log cells were harvested by centrifugation and washed several times with sterile 10% glycerol to render them electrocompetent. Electrocompetent cells were incubated with the pGREEN plasmid on ice and transferred to an electroporation cuvette and electroporated. After electroporation, the cells were left to incubate in recovery media and serial dilutions of the transformed cells were prepared and plated on selective media containing ampicillin and allowed to grow at room temperature overnight. The transformation efficiency was calculated to be 3.2 x 10^9 transformants µg^-1 of pGREEN. To verify electrotransformation, plasmid minipreps were used to extract pGREEN from the transformed cells and a DNA restriction analysis was performed with controls to identify the pGREEN plasmid.

39. Me, J, and I

Presenter(s): Jimenez, Daniela **Faculty Advisor:** Ms. Jules Floss

Discipline: ***Art***

As a young artist, I am trying to discover my calling and find my style. “Me, J and I” is a self-portrait. The imagery chosen is symbolic of occurrences in my life. They won’t jump out at the viewer and tell them what they are, that is why the piece is so meaningful to me. The figure represents me as a woman. The head above the body represents the sun and the moon in one. It is also symbolic of my mother, who is a key influence in my life. She is night and day and inspires me to perform to my full potential. The spiraling road in the left of the paper stands for the road of my life. The lines represent all that has happened. I feel that the black and white is suitable for this particular print because the dramatic effect is pleasing to the eye. By creating this print I am expressing my life and conceptualizing it for others to understand it.

40. Logical or Illogical? Determining the Differences in Bram Stoker’s *Dracula*

Presenter(s): Johnson, Darius J. **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

The novel Dracula by Bram Stoker lends itself to a deconstructive analysis. The book itself tackles the struggles of both readers and characters to determine what is sane/insane, good/bad, right/wrong, logical/illogical, and truth/fiction. The way it ends is completely different from the way it began. Characters are completely different from who they were before. And views on characters are changed, manipulated, or distorted for the reader. You see in this novel how the British customs, values, and belief systems are very prevalent in the majority of the novel and how Dracula plays an important role in

changing how people think of reality as a whole. For example, Jonathan Harker's journal transforms tremendously as the story proceeds. Throughout the novel, I read and observed how insanity was looked upon as negative until the use of it was relevant. I witnessed how the characters thought processes were challenged, put to the test, and also proven insignificant. My research for this paper would focus on whether or not the reader can determine the differences between sanity and insanity. When do characters cross the line between logical and illogical thinking. And also, why does the author make it seem acceptable to do certain things if the motivation behind it or the mindset for it is considered reasonable or relevant at the time.

41. Thoughts

Presenter(s): Johnson , Rachel **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

Thoughts is a self portrait that was completed two years ago. The use or charcoal enabled the achievement of bold lines, rich texture, and high contrast. The aversion of my face from the viewer portrays my disconnection from the world. An expression of calm focus and intense determination allows a glimpse of a tenacious spirit. The smooth blending and smudging of charcoal emphasizes the feminine aspects of my face, softening the effect of such a harsh expression. The gently curving lines suggest a vulnerability and retention of innocence. The shadows and shading represent struggle with darker thoughts. Light illuminating the front of my face symbolizes hope for the future. This piece is not only an outside view for others but it is a reflection of me as an individual and an

42. Copper and Lead Analysis of Soil Samples Using Atomic Absorption Spectroscopy

Presenter(s): Kingsbury, Nathaniel **Faculty Advisor:** Dr. Meredith Storms

Discipline: ***Chemistry***

The effective determination of lead and copper concentrations in soil accurately is very valuable in many scientific fields, especially in the field of forensics. This technique is especially valuable for forensic soil analysis. The project used samples taken from two areas of different composition and compared the metal concentrations of both. One sample was taken from a residential area and the other from a firing range. The technique used Atomic Absorption Spectroscopy to accurately detect copper levels as low as 1.24 ppm and as high as 102.09 ppm with wavelength set to 218.2 nm. Both lead and copper have toxic dose levels in humans; the level for lead can be as low as 0.1 ppm, whereas the toxic level for copper is reported to be 40 ppm. This project also worked to find an effective and efficient method for the extraction of metals from soil samples.

43. Synthesis of Biodiesel Using Liquid Morpholine as a Basic Catalyst

Presenter(s): Kingsbury, Nathaniel **Faculty Advisor:** Dr. Cornelia Tirla

Discipline: ***Chemistry***

This project can be used to produce biodiesel from pure canola oil, waste vegetable oil, or animal fat. The method described in the project uses excess of methanol and the liquid amine morpholine as a catalyst. With this method the biodiesel is produced without soapy water and in less corrosive reaction

conditions. The excess methanol can be recovered by distillation and the recovery of morpholine was moderately successful (52%) can be improved with a more powerful vacuum in a vacuum distillation. This method uses a new catalyst that reduces the problems in the purification of biodiesel and glycerol. The described method uses simple liquid-liquid extraction to separate the biodiesel produced from the glycerol. Once extracted, purification involves filtration and evaporation. The final part of the method is testing using GC-MS, 1H NMR, and 13C NMR for the presence of biodiesel.

44. That Sexy Elf: How Do We Evaluate Online Characters?

Presenter(s): Kuhfahl, Amanda **Faculty Advisor:** Drs. Kelly Charlton and Shilpa Regan

Discipline: ***Psychology***

Prior research has shown us that people make judgments about others based on superficial characteristics such as facial features (Berry & Zebrowitz-Macarthur, 1986), a name (Mehrabian, 1988), or the color of one's clothes (Vrij, 1997). These judgments can influence our interactions with people. This effect should be no different in an online world. Only, in the online world the person we are interacting with is represented by a graphical creation. Each game allows users to personalize their character in many ways (ex. sex, hair color, race, and height). The current study seeks to examine those variables associated with our judgment of online characters. Of particular interest is the way female versus male characters are evaluated and if whether or not our own views of masculinity or femininity make a difference in this evaluation. Two hundred introductory psychology students read about a male or female character (in either light or dark armor) who was involved in one of four gaming interactions. Participants then rated the character on 23 semantic differential trait evaluations. A factor analysis of the trait evaluations revealed three distinct factors. The largest factor addressed overall evaluation (ex. "unlikeable – likeable"). The second factor was "Flirtatiousness" (ex. "Very Flirtatious – Not flirtatious"). The third factor "Aggressive Sexuality" overlapped the flirtatiousness factor but also including "cocky." Participants were then given the Ambivalent Sexism Inventory (Glick & Fisk, 1996). For overall evaluation, armor color and level of talkativeness made a difference. For female character evaluation, we found that those who score high on benevolent sexism rated the female characters higher than those who scored low on benevolent sexism. For the flirtatiousness factor there was a difference for talkativeness, armor color, character sex and perceived rank of character. Finally, for the sexual aggressiveness factor, character sex, and armor color made a difference in evaluations.

45. Who's in a Name: Gender and Racial Stereotype Threat for Employment

Presenter(s): Kuhfahl, Amanda L. **Faculty Advisor:** Drs. Shilpa Regan and Kelly Charlton

Discipline: ***Psychology***

Past research has found that employment decisions are biased, often based on gender, ethnicity, and educational status (Rollins &Valdez, 2006). It is believed that the general population possesses stereotypes for which genders and ethnicities should hold a position in our society. These stereotypes can often be invoked purely based on name (Bruning et al., 2000; Mehrabian, 2001). The purpose of this research was to determine if job selection/hiring is influenced by gender and/or ethnicity (White vs. African American/Black). In addition, the research investigated if personality characteristics (e.g., commitment, ambitiousness) were also attributed to name, gender, and ethnicity. Participants were 130 (male = 29.2%, female = 70.8%) college students from a Southeastern Liberal Arts College who were

asked to hire" employees for a dishwasher position in a hotel based on a resume. While all the resumes were equal, the name of the applicant varied by gender and ethnicity. The names of the candidates were either stereotypically White (e.g., Mary Parker, Jason Edwards) or African American/ Black (e.g,. Travon Roberts, Shaniqua Williams). Following each resume, were several Likert scale personality questions assessing commitment, competence, dependability, ambitiousness, and intelligence. There were several main effects found for race. Black applicants were seen as less committed, less ambitious, and less capable than White applicants. Of most interest, we found a significant interaction between race of applicant and sex of applicant for the commitment, competence, ambitiousness, dependability, and capability perceived in the applicant. In general, for all five dependent variables Black male applicants were rated lower overall, but especially lower than White male applicants and Black female applicants were rated slightly higher or similarly to white female applicants. Results indicated that a name that connotes a race can affect perception of personality as well as job relevant characteristics.

46. Modeling of Electrophoretic Mobility of Amino Acids

Presenter(s): Leviner, Ashley **Faculty Advisor:** Dr. Siva Mandjiny and Dr. Tom Dooling

Discipline: ***Chemistry and Physics***

This program was designed to calculate the isoelectric point [pI] of amino acids and peptides, as well as simulate their movement in a solution of a user-defined pH. The user is also able to view the titration curve of single amino acids. The titration curve page also allows the user to view the pKa values of the amino group, the carboxyl group, and the side chain where applicable. The isoelectric point is also graphically displayed on the titration curve screen with the pKa values, in addition to being displayed numerically on the solution screen above the solution. When a user enters a string for the peptide, the program will estimate the peptide's isoelectric point.

47. Selective Modulation of the Endocannabinoid System for Targeted Protection in Kainic Acid Models of Excitotoxicity

Presenter(s): Locklear, Jonathan
Graves, Emily
Loehr, Tyler
Irra, Daisy

Faculty Advisor: Drs. Ben Bahr
Naidoo, Vinogran
Karanian, David A.
Nikas, Spyros P.
Wood, JodiAnne
Makriyannis, Alexandros

Discipline: ***Chemistry and Biology***

The endocannabinoids anandamide (AEA) and 2-arachidonoylglycerol (2-AG) have been implicated in neuroprotective responses against excitotoxic events linked to seizure activity and associated neurodegeneration. Related to such responses to injury, excitotoxic kainic acid (KA) injections increase AEA levels in the brain. To study the modulation of this response in vitro and in vivo, we utilized new-generation compounds (AM5206 and AM6702) that selectively inhibit the AEA deactivating enzyme fatty acid amide hydrolase (FAAH), as well as a dual inhibitor (AM6701) that blocks FAAH and the 2-AG deactivating enzyme monoacylglycerol lipase (MAGL). AM5206 protected against the KA-induced degenerative cascade in hippocampal slices assessed 24 h post-insult. Cultured slice data also suggest AM6701 elicits more protection than AM6702 by ameliorating cytoskeletal breakdown and declines in synaptic markers and neuronal integrity. In vivo, KA administration induced seizures and the same

neurodegenerative events exhibited in vitro. Protection by AM5206 and AM6701 was evident with respect to cytoskeletal damage, pre- and postsynaptic markers, seizure scores, and behavioral deficits. Our study has identified and characterized new-generation inhibitors of endocannabinoid-degrading enzymes to enhance cannabinergic signaling, and in turn prevent excitotoxic progression that cause brain damage.

48. Social Comparison and Implications for Self-Perception of Dating Viability

Presenter(s): Long, Jody
Nicole Simon

Faculty Advisor: Dr. Melanie Hoy

Discipline: ***Psychology***

Past research has shown that women's body image influences her self-esteem, as well as other areas of her life, such as dating practices (Harter, 1985a, 1985b; Mendelson, Mendelson, & Andrews, 2000; Neemann & Harter, 1986). One of the important contributors to women's body image is how they perceive their appearance in comparison to other women (Coomber & King, 2008; Trottier, Polivy & Herman, 2007; Wasilenko, Kulik, & Wanic, 2001). Very little research has combined the aforementioned ideas, and no research has given insight on whether the social comparison of attractiveness may extend to comparisons of personality as well as physical appearance. The present study investigates whether social comparison (of physical appearance or personality) has influence on women's perception of viability as a dating partner, and in turn, whether this has implications for risky decision making in sexual practices. We hypothesize that women who feel more dissatisfaction after comparing themselves to peers are less likely to feel like a viable dating partner and more likely to engage in risky sexual behaviors.

The participants of this study are 150 women of varying ages and ethnicities from the UNCP campus. After priming the participants to socially compare either their physical appearance or personality to individuals in fictional vignettes created by the researchers, the participants will complete a series of measures assessing current behaviors and likelihood of engaging in various risky sexual activities. The results may have implications for why some women choose to engage in risky sex behaviors and may give basis for future research in this area.

49. A Dream State

Presenter(s): McAden, Mallory

Faculty Advisor: Mr. Brandon Sanders

Discipline: ***Art***

As human beings, we sometimes take daily occurrences for granted. For instance, going to sleep every night. I began to ponder about slumber and what it really looks like to sleep. While in deep thought, I came to find that we don't really understand the symbiotic relationship we share with our sheets (or whatever we sleep on for that matter.) How would you even begin to show the difference between the conscious and sub conscious? I chose to print the body on a material other than paper, this material being a sheet. After printing the body of the sheet with acrylic paint, I began to notice wrinkles in the image of the body made by the sheet. I chose to carry on leaving the wrinkles present, realizing this shows mass on a surface. Butterflies are scattered neatly among the sheet. The butterflies represent somewhat of a dream world which coincides with the motivation of the project. While encountering any state of sleep we are able to change positions in order to fit our comfort. To show this, I altered the

movement of the limbs in a different color to show transition in sleep. Butterflies also show transition in their cycle of life, making the butterflies in the background relate more to the image. The relationship of our body on a sheet sleeping soundly is an incredibly strong one. I feel that if humans were to take the time to realize the miniscule details in life we would begin to appreciate life in a different light.

50. A Steampunk Self Portrait

Presenter(s): McKone, Caitlin **Faculty Advisor:** Dr. John Labadie

Discipline: ***Art***

The piece I have submitted for the 2011 PURC is autobiographical. In this artwork I am attempting to deal with what is a significant part of my identity: the fact that I am in a wheelchair. I use my wheelchair throughout daily life and it has become a part of me. As such I from the beginning of this project I wanted to incorporate my wheelchair in this self-portrait and then also utilize other metallic and machine parts to further develop this image.

Moreover, since my wheelchair is manually controlled, I believe an effective way to depict my personal connection to the world of mechanical things, of machines, is through Steampunk-inspired imagery. Steampunk is a sub-genre of science fiction and based in the period of the Victorian age. Such works often involve subjects such as time and space, machinery, and alternate histories. The elaborate, often fictionalized technologies within Steampunk are primarily derived from literary works of authors such as HG Wells and Jules Verne.

With the ideas and imagery of Steampunk fashion and machine movements (gears for example) driving my imagination I built myself, and my wheelchair into a tableau that is as fascinating to view, as it was to conceptualize and construct. Moreover, the idea of living in a world where everything is powered by steam is just amazing to consider. I am captivated by this idea and that is what has driven me to develop this image.

In terms of defining sources for my personal identification about things-Steampunk, my first experience with the ideas behind the Steampunk movement was in book “Stardust” written by Neil Gailman. I have also accomplished many hours of research online and have only encountered three other attempts to deal with the idea of wheelchairs guided by Steampunk aesthetics and/or technologies. I am happy to present my artwork as the fourth, and certainly most personal, Steampunk wheelchair piece I have yet encountered.

51. The Effects of Humor and Non-Humor Techniques in Television Commercials Placed In Different Program Environments: An Experiment with Car Insurance Commercials

Presenter(s): Merritt, Grant **Faculty Advisor:** Dr. Dandan Liu

Discipline: ***Mass Communication***

The purpose of this study is to measure the effects of humorous and non-humorous television car insurance commercials that are placed in humorous and non-humorous programming on the ability to recall information about commercial and if the commercial persuades a reason to purchase. The study is needed to update the existing study on humorous and non-humorous television commercials because the most recent study was conducted in 1978. This 1978 study, “The Impact of Program Environment on Recall of Humorous Television Commercials,” did not use car insurance commercials. Because of the

existing literature on the study, my hypothesis is that humor affects a person's ability to remember the information in the commercial, and it affects the decision to purchase.

52. The Loire Valley of North Carolina: Wine Production in the Yadkin Valley River Region.

Presenter(s): Money, Austin M. **Faculty Advisor:** Mr. Nathan E. Phillippi

Discipline: ***Geology and Geography***

The purpose of this study is to look at the geographical distribution, and the cultural impact of wine production in Wilkes, Yadkin, Forsyth, and Surry counties of North Carolina. These four counties, which constitute the Yadkin Valley River Region, have been described as producing wine of the same caliber as those created in the Loire Valley in France, and has the largest number of wineries within North Carolina.

To determine the number of wineries and their distribution, their locations are going to be mapped by finding their longitudes and latitudes using Google Earth, and placing their positions, using ESRI Arcmap, on topographic and image maps with a LiDAR background to create relief. Agricultural data will also be used to create maps to demonstrate the changing agriculture patterns within these counties.

53. The Essence of Women's Roles

Presenter(s): Moore, Elizabeth **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

The focus of women's roles changes over time. The roles of women are based on the time period that they are in, their relationships with the men in their lives, what rights they do or don't have, and what they can be of good use for. In Sir Authur Conan Doyle's novel, The Hound of the Baskervilles, we have these elements represented. The women of The Hound of the Baskervilles are limited to having a role only where and when they are needed. Unless they are playing a background role of supporting their husbands or the men in their lives they aren't needed. These women didn't have rights and their roles were simply only present as needed by the men. My research will involve discovering the roles of the women of the 19th century in The Hound of Baskervilles. I will also use this research to help me analyze the limitations of these women through female characters of this novel, and the guidelines that were expected of them during this time period.

54. The Dichotomy of Logic and Superstition

Presenter(s): Nesbitt, Maleka **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

The Hound of the Baskervilles opens with a mysterious story of the Baskervilles' Curse, which introduces the many themes of superstition, myth, reality, and logic throughout the novel. The opposites of superstition and logic create a dichotomy for the novel. Arthur Conan Doyle creates his characters based on their ideas of logic and superstition. First you have Sherlock Holmes; a man whose ego is taller than he and who's thought process is based on scientific facts and logic rather than the belief in superstition. Then there is Dr. Watson, Holmes' sidekick. Watson seems to have no thought of his own about the thought process of logic and the belief of superstition considering he is so codependent on

Holmes and only feels important by association. Watson has the determination to solve the case yet finds his self-unsure of what his thought process or belief should be. Some of the secondary characters help the reoccurrence of the superstition belief with their constant rumors and troubled feelings about the moor. Throughout the story the superstitions of the secondary characters are often brought up and then dismissed by certain characters that choose the logic thought process over superstition belief. The purpose of creating the novel into a dichotomy is what I'm looking for in my research. Why is it important that Doyle separates logic from superstition? Finding evidence about Doyle's thought process will help answer my question. Looking for criticism about Watson and Holmes' beliefs and thought process will also help answer these particular questions.

55. Vocal Texture throughout the Antiquity and Baroque

Presenter(s): Nolan, Katherine **Faculty Advisor:** Dr. Valerie Austin

Discipline: ***Music***

This poster will present the evolution of musical styles during the antiquity and baroque eras. Beginning with plainchant, when it started and the three types which are involved. Then moving to polyphonic sacred music and including examples of masses and their composers. Finally it will conclude with polyphonic secular music and its composers. There will also be different styles added into this genre and examples.

56. Within Capsule Variability of Anthocyanin in Bilberry Capsules

Presenter(s): Oliphant, Jordan **Faculty Advisor:** Dr. Meredith Storms

Discipline: ***Chemistry and Physics***

The use of Traditional Medicine / Complementary and Alternative Medicine (TM/CAM) is increasing rapidly in the United States. Despite the increase in the use of herbal products as a result of their promising potential, questions remain concerning their quality, safety and efficacy (QSE). Previous research data suggests a significant variation among standardized capsules; however, this data was acquired with one sample per capsule. Therefore, the goal of this project is to employ pH-differential spectrophotometry to assess the variability of anthocyanin with multiple samples from a single capsule.

57. Measuring the Elastic Properties of Perma-Gel®

Presenter(s): Panter, Rebecca **Faculty Advisor:** Dr. William Brandon

Discipline: ***Chemistry and Physics***

PermaGel is a gelatinous material that has a similar consistency to that of human soft tissue. This is a useful tool in laboratory settings where in vitro experiments call for tissue like interfaces. In the context of acoustics research, the compressibility of a material directly affects the propagation of sound waves through a medium. Experiments were carried out to measure the elastic modulus of Perma-Gel using both static and dynamic methods. The elastic modulus is found to be a function of strain and frequency.

58. The Idea of Manliness: The Relationship of Sherlock Holmes and Dr. Watson in *The Hound of the Baskervilles*

Presenter(s): Perry, Jessica **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

In *The Hound of the Baskervilles* Sherlock Holmes and Dr. Watson seem to have a very unique relationship that is different from the other characters of the novel. Their relationship runs deeper than just companions and the way the two characters interact adds a good deal to the story. There is a sense that these two need each other and are able to feed off of each other's personality. I intent to look closely into the relationship of Holmes and Watson to determine the importance of their close knit relationship and why it is important to the story, The Hound of the Baskervilles. My research will show the ideology of the time period that the story was written to give us an idea of what men were supposed to be like and how critics view the short-fiction story. Do the critics, then and now, have a positive view of the duo's relationship or is their relationship a conflict with the Victorian's views of manliness?

59. The Influence of Renaissance Instruments on Modern Coincident Instruments

Presenter(s): Pierce, Christian
Herring, Rachel

Faculty Advisor: Dr. Valerie Austin

Discipline: ***Music***

The purposes of this presentation are to describe how Renaissance instruments were categorized into families, and to relate their similarities to the instrument's modern day counterparts. Certain characteristics must be observed including range, tone, material used for the instrument, and the way in which the sound was produced. Renaissance instruments are, therefore, uniquely placed into the families of keyboard, strings, wind and percussion. The advances that came after the ending of the Renaissance Era led to the utilization of other materials to make more resonant instruments. This research presentation will show the importance of the Renaissance Era in the development of modern day instruments.

60. The Benefit of "Pre-Washing" Biodiesel Fuel With Its Own Glycerol Waste

Presenter(s): Pilot, C. Nicholas **Faculty Advisor:** Dr. Thomas Dooling

Discipline: ***Chemistry & Physics***

A common method of producing biodiesel fuel consists of reacting liquid vegetable oil with a mixture of methanol and potassium hydroxide catalyst. This converts the oil into a synthetic diesel fuel along with some waste products. These waste products consist mostly of glycerol with some residual methanol and fatty acids that form a "soapy" material when they react with the potassium catalyst. The glycerol, which is immiscible with the biodiesel, is drained from the fuel and the remaining waste is extracted out by washing the biodiesel with water. The process of washing with the water is time consuming, wastes and contaminates a large quantity of water, and can result in the production of an emulsion if not done carefully. This work has shown that if the biodiesel is "pre-washed" in its own waste glycerol, the glycerol can be used to extract out many of these waste products simplifying the final process of washing with water and decreasing the amount of water used and contaminated in this

process. Spectroscopic data demonstrating the utility of this new step in the process for the purification of biodiesel confirms these results.

61. Stepping Out: Female Roles in Late 19th Century in Bram Stroker's *Dracula*

Presenter(s): Prine, Alexis **Faculty Advisor: Dr. Susan Cannata**

Discipline: ***English***

Roles of women in the late 19th century are strategically defined in Bram Stroker's *Dracula,* and the physical appearance of the two major female characters helps to seal their fates. The stereotypical female of this era is generalized as being submissive and weak, while the "New Women" are described as being strong and progressive. Mina Harker is a portrayed more as a stereotypical female character although she possesses a few traits of this illustrious "New Woman." While her best friend, Lucy Westenra fits more in the category of a "New Woman" while still express certain features of the traditional woman of the 19th century. She, Lucy, is beautiful and she suffers for being so physically attractive. In this story Lucy uses her sexuality as her main asset, and Mina uses her mind and religion as her main assets. With these assets in tow, Mina survives and Lucy does not. Just as Mina uses a mental and religious type of asset she suffers emotionally. Lucy uses a physical attribute to get to where she wants to be in life and she is punished in the physical sense.

My research will focus on how these roles lead to either the survival or the demise of the major female characters in this novel. I will also look at how the physical descriptions of these women weigh in with the transparent qualities described in the text play a part in the destruction or fortitude of the characters.

62. Mutational Analysis of HTZ1: Cloning a Suppressor Gene

Presenter(s): Queen, Anna **Faculty Advisor: Dr. Maria Santisteban**

Discipline: ***Biology***

The members of the H2A.Z family of variant histones are highly conserved and represent a separate evolutionary lineage of H2A proteins. The protein is essential in mammals and other metazoans, however its function is only now beginning to be understood. In the yeast Saccharomyces cerevisiae the histone H2A.Z homolog, Htz1, is dispensable for life. Mutations in HTZ1 cause nevertheless numerous phenotypes, consistent with the various functions that Htz1 has been implicated. One of the most important Htz1 roles is in transcription regulation. Deletions of HTZ1 are lethal when combined with an otherwise viable mutation in the gene encoding the second largest subunit of the RNA polymerase II (Rpb2). The htz1 RPB2-2 double mutant is said to be synthetic lethal. In this project, my goal is to identify suppressors of the lethality of the htz1 RPB2-2 double mutant, which should help us identify the specific defect of this mutant. The identity of these genes should indicate if the defect of htz1 RPB2-2 is at an early or late step in the transcription process.

63. Was Secession Constitutional?

Presenter(s): Richters, Marie **Faculty Advisor:** Dr. Jaime Martinez
Discipline: **History**

To depict the different perceptions of the Civil War era, Dr. Martinez asked her Civil War and Reconstruction class (HST 3100 Fall 2010) to hold a debate concerning the legality of secession. Using the Constitution, as it existed in 1860, and several other documents from that period, we were to determine if secession of the southern states was constitutional. I was part of the Affirmative group arguing that secession was legal and the states held the right to secede from the Union. To prepare for the assignment, my group researched said documents for solid evidence supporting secession. Although the legality of secession was ultimately decided by the Civil War, in which the Union prevailed and secession was deemed unconstitutional, the debate was meant to present the differing perspectives on secession held by 1860 Americans. Our in-class debate was very successful and I believe our class benefited from the project. Dr. Martinez later asked us to re-create the debate publicly on February 22, 2011, as part of UNCP's "Perceptions on the Civil War Era" series, with an introduction by Dr. Jeff Frederick and closing comments by Dr. Emily Neff-Sharum. I would like to take time to recognize this project in the upcoming PURC Symposium because I believe this project is an excellent example of how students can benefit from interactive classroom assignments. This project allowed me to educate myself and other students about the legality of secession, as well as commemorate the sesquicentennial of the Civil War.

64. The Depth of the Forest

Presenter(s): Roberts, Lindsay **Faculty Advisor:** Dr. Adam Walls

Discipline: ***Art***

For this three dimensional project I had to incorporate wire and stone to design a tree. Trees have always captured my interest because each one has a unique character, shape and beauty. After the project was assigned, I found myself analyzing tree trunks, their branches and other structures of trees. I used my observations and studies to inspire my creation of a realistic tree. My favorite part of my project was the craftsmanship and the process. Building a structure from anchor wire was a meticulous task, but it was a challenge I enjoyed. For the stone base, I found a rugged stone with dirt, moss and punctured holes. The stone had the same unique qualities of the tree and each component worked nicely together. My finishing touch to my design was moss that I found under a real tree. It was the last element in my design, and I would describe it the garnish of my piece. Creating this piece has made me appreciate the beauty and intricate design of nature. Nature will probably be a major inspiration for my work in the future because I feel a strong connection to it.

65. Putting the Cart Before the Course: The Impact of Loss of Classroom Space on Elementary Music Programs

Presenter(s): Rodgers, Angela Lynn **Faculty Advisor:** Dr. Valerie A. Austin

Discipline: ***Music***

Many elementary schools across America are growing increasingly crowded as the number of students per school rises and space dwindles. A potential solution was taking music teachers' dedicated classrooms and giving them to other teachers; while giving music teachers a cart for their materials

which they then take from class to class. This method of teaching from a cart has the potential to make a difference negatively in the quality of music education provided to the students. A survey was given to elementary music teachers across the country asking them how they would evaluate their teaching and if they are able to meet the 9 National Standards of Music Education in either location.

66. Degree Pathway: Survey of Effectiveness

Presenter(s): Rodgers, Angela Lynn
Nguyen, Kimberly
Valencia, Princess Joy
Nunnery, Robert

Faculty Advisor: Ms. Darcy Hayes

Discipline: ***Academic Affairs***

A variety of tools are available to assist students with course selection for timely degree completion. One tool that The University of North Carolina at Pembroke recently implemented is the Degree Pathway. The Degree Pathway tool can be used to effectively map a student's full 4 years to help them graduate in that timeframe. A 9-question survey was administered to students to evaluate the student utilization and satisfaction of this tool. .

67. Study of Tree Frog Population and Distribution throughout Wet land and Terrestrial Areas

Presenter(s): Rowlett, Jasmine

Faculty Advisor: Dr. John Roe

Discipline: ***Biology***

North Carolina has a high diversity of frogs and toads, with at least 30 species in total. With such a large diversity of frogs and toads, it is important to preserve their natural habitats, and monitor the overall populations. In recent years many scientist have observed a decline in the population and distribution of amphibians, but land managers often lack the detailed biological information needed to implement monitoring and conservation efforts. For example, many managers focus their efforts on wetland areas and tend to neglect threats in terrestrial habitats, despite the fact that many species of frogs use terrestrial habitat for long periods of the year. Through this project we hope to gain a little more knowledge on how tree frogs utilize both terrestrial and wetland areas, in hopes to make more knowledge available to future conservation efforts and to better understand how weather conditions and seasonality correlate with frog calling and the distribution among terrestrial areas. We will reach these goals by using an Automated Recording System to determine what species are present and to track their breeding activity periods in aquatic areas. We will also set up PVC pipes on trees in the surrounding terrestrial habitat to sample tree frog terrestrial activities. We will also be collecting various weather conditions, such as air, ground, water, and PVC pipe temperatures, relative humidity, and rainfall. We hope that we can better determine exactly how far frogs move away from wetlands during non-breeding seasons, and how weather conditions impact their activity and habitat use.

68. Deviousness and Desire: Sexuality and Relationships in Bram Stoker's ***Dracula***

Presenter(s): Sadler, Matthew **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

Victorian England was a society largely consumed by its obsession with image and expectation. Being as such, the social perspective of this period took a particular dislike to indulgence, particularly in the form of sex. The "ideal woman" of the period was expected to be sexually pure and loyal to her husband, though these expectations were not necessarily imposed on men. Bram Stoker's *Dracula* inverts these expectations. While the male characters appear to be highly devoted, the female characters, both alive and undead, share multiple relationships that violate the conventions of the Victorian Period. The characters of Lucy Westenra and the Brides of Dracula also strongly display sexual thoughts and desires. My research would include investigating the various ways in which Stoker's characters invert and challenge the conventions of sexuality in the Victorian period.

69. Determining the Expression of the Makes Caterpillars' Floppy Toxin in Both Phase Variants of *Photorhabdus luminescens*

Presenter(s): Sandoval, John **Faculty Advisor:** Dr. Leonard Holmes
Inman, III, Floyd L.

Discipline: ***Chemistry & Physics***

Photorhabdus luminescens is a Gram-negative, facultative, entomopathogenic bacterium that lives symbiotically with the soil nematode, Heterorhabditis bacteriophora. This bacterium is unique to all terrestrial bacteria as it is bioluminescent and has the ability to undergo phase variation. Phase variation is a physiological process that *P. luminescens* uses to survive in sub-optimal conditions. This process of P. luminescens produces two distinctive bacterial phase variants, phase I and phase II. The phase I variant is not found to be free-living within nature and only exists within the gut of the nematode and nematode infected insects. The phase II variant is frequently encountered within the laboratory setting and is the more stable of the two, which exhibits a significant decrease in expression levels (e.g. bioluminescence). The phase I variant of *P. luminescens* utilizes its symbiotic nematode as a vector for insect infection allowing for death and bioconversion of the insect into nutritional components for both partners. P. luminescens produces an array of virulence factors that facilitate the quick death of the insect. One virulence factor, makes caterpillars' floppy (Mcf), is a protein toxin that *P. luminescens* secretes to evade the cellular immune response of the insect by triggering apoptosis in insect hemocytes. To investigate Mcf expression in both phase variants, RNA will be purified from each phase variant cultured in both Galleria mellonella larvae and liquid bacteriological media. A reverse transcriptase – polymerase chain reaction (RT-PCR) will be utilized to reverse transcribe and amplify a 500 base pair (bp) sequence of bacterial RNA that specifically encodes for the Mcf toxin. These reactions will determine if the Mcf toxin is only produced in the infected insect and to identify the phase variant associated with Mcf production.

70. Delineating the Orangeburg Scarp in Scotland County, North Carolina by mapping the westernmost extent of Carolina Bays

Presenter(s): Sanford, Anna L.
Bryant, Laurie M.

Faculty Advisor: Dr. Lee Phillips

Discipline: ***Geology and Geography***

The Orangeburg Scarp is a prominent wave-cut paleoshore that marks the boundary between the Inner and Middle Coastal Plain of the southeastern Atlantic Seaboard. The position and elevation of this scarp indicate a Pliocene maximum transgression and has provided a metric for post-development regional uplift. Carolina Bays are dominant geomorphic features found in large numbers within the Atlantic Coastal Plain and are interpreted to have formed by prevailing winds blowing over water-filled depressions during the Pleistocene. We map the continuation of the Orangeburg Scarp from Marlboro County, South Carolina into Scotland County, North Carolina using a combination of remotely gathered data including LiDAR (Light Detection and Ranging) data, aerial and infrared photography. Our efforts are also focused on determining the density, distribution, and axial orientation of prominent and relict Carolina Bays in the region. These observations are recorded in a Geographic Information System database using ESRI Arcview and Arcmap. Our investigations suggest a marked termination of the Carolina Bays along the Orangeburg Scarp focus area. At present, our observations indicate the westernmost limit of Carolina Bays in the region is coincident with the northeast-trending Orangeburg Scarp. Some bay forms in the area truncate the Orangeburg Scarp. The orientation of the Carolina Bays in the Scotland County area are generally consistent with those in, adjacent, Robeson County. The density of bay formations in Scotland County is not as numerous as in northern Robeson County and tends to diminish westward, closer to the Orangeburg Scarp. Fortuitously or not, we suggest the Orangeburg Scarp can be delineated by mapping the westernmost range of Carolina Bays in this region.

71. Seeking Liberation: An Examination of Nineteenth Century English Women and Bram Stoker's *Dracula*

Presenter(s): Saaristo, Tera

Faculty Advisor: Dr. Susan Cannata

Discipline: ***English***

Nineteenth century English women were generally stereotyped as domestic and dependent individuals who, for the most part, did not work outside of the home. Yet, broader conceptions varied somewhat depending on the social class. For instance, some middle class women proved themselves extremely competent in holding occupations outside of the home, and this was acceptable; however, for a woman of higher class, such as aristocracy, the idea of having a job outside of the home or contributing to society in any way non-domestically was unfathomable and below her. However, at the turn of the century, society, particularly women, was seeking to change this view. Bram Stoker's novel *Dracula* addresses this English stereotypical view of women in the characters of Mina Harker and Lucy Westenra. Mina is a woman of middle class; she is a school mistress and friend to Lucy Westenra who is of the aristocracy. Lucy, as expected, does not work and she is engaged to an aristocratic man. These women prove themselves invaluable in the search and destruction of Dracula, which, in turn, challenges and, in some ways, changes the former ideas concerning women. But, how did English society deal with the impending liberation of women? My research will focus on learning exactly how women from both the middle class and the aristocracy were viewed in the latter part of the nineteenth century, and if and how the complexity of class systems affected this change. I will also explore the ways in which the female characters in Dracula are indicative of the changing view of English women.

72. Tetramethylammonium Hydroxide Catalysis of Biodiesel Production

Presenter(s): Schroetter, Alex
Kingsbury, Nathaniel L.
Dimitrova, Jasmina R.
Archer, Trey T.

Faculty Advisor: Dr. Rachel B. Smith

Discipline: ***Chemistry and Physics***

The production of biodiesel from used or virgin oil takes place through a transesterification reaction with methanol in the presence of an acidic or basic catalyst. Traditionally, potassium hydroxide, a corrosive and hazardous basic compound, is used as the catalyst in this reaction which takes place at approximately 60º C. Unfortunately, heating this reaction can consume part of the energy that would be gained from the biofuel produced.

Tetramethylammonium hydroxide (TMAH) can be used as both a basic catalyst in this reaction as well as a phase transfer catalyst, allowing for better mixing of the polar methanol layer and the non-polar oil layer. This allows the reaction to occur at room temperature, decreasing the amount of energy consumed in the production of biodiesel by this method. This project aims to optimize reaction conditions for the conversion of virgin canola oil to biodiesel using TMAH at room temperature. Reaction conditions varied include amount of methanol and TMAH require and reaction time.

73. Dinner's Ready! The Role of Family Meal Times in Later Emotional Eating Behaviors

Presenter(s): Sheppard, April

Faculty Advisor: Dr. Melanie Hoy

Discipline: ***Psychology***

Current research on emotional eating has focused on exploring developmental precursors. This research has found that experiences in childhood such as teasing and abuse may contribute to the development of emotional eating. Modeling is another causal mechanism for the development of emotional eating. One area that has not been widely explored is the role of family modeling. More specifically, there has been little research on the atmosphere of family meals and its possible correlations with emotional eating. This study investigated frequency and atmosphere of family mealtimes during childhood and its relation to later emotional eating. Participants completed a series of measures assessing current emotional eating and childhood family meal times. Additionally, participants completed a short writing task to elicit one of five different emotions and presented with the opportunity to eat food. Food consumption was recorded and emotional eating was assessed by examining emotional responses to the writing task and subsequent eating behavior. Analyses show that the schedule and emotional climate of family mealtimes was related to adult emotional eating experiences. More frequent family meal times were related to lower emotional eating as an adult, but only if those family meal times were positive in nature. When family mealtimes were considered stressful experiences, less frequent meals were related to lower emotional eating scores. Additional correlations between specific meal time experiences in childhood and current functioning revealed that sitting down together at a table for family meals was related to less adult emotional eating, as opposed to eating elsewhere. This research may have important implications for the prevention of eating-related disturbances in adulthood, both in terms of eating pathology and obesity.

74. Exploring Sexual Attitudes in the 21st Century

Presenter(s): Simon, Nicole
Long, Jody
Bolton, Hassanah
McMillan, Jamey
Oxendine, Laurin

Faculty Advisor: Dr. Shilpa Regan

Discipline: ***Psychology***

Development of better education and health prevention programs is important as one of the fastest growing populations infected by STDs and HIV/AIDS includes teens and young adults (CDC, 2010), with ethnic minorities making up a higher percentage of those affected (Dean, Steele, Satcher, & Nakashima, 2005). In fact, Kim (2010) found that there are higher rates of sexually active teens among ethnic minorities potentially accounting for a three times higher rate of pregnancy among these youth than their Caucasian counterparts. While the types of sexual education programs currently available to students can be effective, some students are beyond the reach of these predominately abstinence based programs (Zanis, 2005). The inconclusive definitions within sexual education programs are also of concern. The present study compares the sexual constructs held by ethnic minority students to those of Caucasian students, as well as evaluating the implications this has for the varying rates of STDs and pregnancy among ethnicities.

Participants were 85 college students, with ethnic minorities being oversampled (Caucasian=32.9%, African-American=44.7%, Native American=15.3%, Hispanic/Latino=2.4%, Asian-American=1.2%, Biracial/Other=3.5%). They were surveyed on which acts they considered sex and it was hypothesized that there would be differences among ethnicities for different sexual acts. The commonalities among different ethnic groups at UNCP seemed to override the expected differences (such as Hispanics and African Americans being more sexually liberal or Asian Americans more likely to be sexually conservative) of responses towards sexual attitudes that have been suggested by previous research. Sexual attitudes and definitions (such as whether a person is still a virgin after participating in different acts or if an orgasm is necessary for an act to be sex) of UNCP students seem to be rather unanimous, implicating perhaps that the expected variations between ethnicities and sexual educational backgrounds were not seen because of the sense of community shared.

75. U.S. Media Objectivity: A Content Analysis of Coverage of the Proposed “Ground Zero Mosque”

Presenter(s): Simpson, Hannah

Faculty Advisor: Dr. Judy Curtis

Discipline: ***Mass Communications***

This study examines whether the U.S. media appears biased in coverage of the proposed Cordoba Project, also known as the “Ground Zero mosque". The content and headlines of news articles from five national newspapers and two networks were studied to determine if there was a bias. This study analyzes the number of graphs dedicated to the sides in opposition and in favor of the Cordoba Project; the number of persons mentioned or quoted in favor or opposition; if the persons mentioned are citizens, national politicians, city officials or organization representatives; the number of stories that appeared to favor a single side; and the neutrality of the headlines. The study finds that a majority of the news organizations provide more coverage to the opposition than supporters. It is not immediately clear if this is due to the bias of the news organization or to boost ratings. This study also finds the debate is not as prominent in the national media as first perceived.

76. Sympathy for Dracula: Beliefs in Question

Presenter(s):: Spady, Karen **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

I have long been intrigued by vampires and their way life. I have read several novels about vampires, done some research on vampires, and seen multiple movies about vampires. My favorite novel is Bram Stoker's Dracula because of the complexity of the meanings in this novel and how Bram Stoker questions the meanings presented within this novel. In Dracula we read about vampires killing other humans, using them to feed off of, and turning humans into vampires. The main characters of this novel that ultimately go after Dracula see his way of life as morally and lawfully wrong. Dracula's perspective is completely opposite because he sees his way of life as survival much like his human counterparts see their way of life as survival. In this novel, Stoker questions the dichotomy of right and wrong, sane and insane, and good and evil. My research will show the stereotypical beliefs of the Victorian period in which this novel was written. It will also show how Bram Stoker brilliantly brought question to these beliefs and how dichotomies are deconstructed.

77. Judas

Presenter(s): Stephens, Vincent **Faculty Advisor:** Mr. Brandon Sanderson

Discipline: ***Art***

The artwork, Judas is a critical view of the rise in suicide through a biblical perspective. I attempt to put a realistic perspective on things that make people uncomfortable. I used an analogous color scheme to depict the decaying emptiness of the lost. Life was once bright but over time becomes darker and worn. This jading of light forms a pattern that can be found in most cases of suicide. In review, Judas is showing that suicide is a common problem from ancient times till today.

78. OH BABY!: Views of Infant Temperaments Across Cultures

Presenter(s): Stoker, Courtney **Faculty Advisor:** Dr. Beverly King
Evans, Raven

Discipline: ***Psychology, Honors College***

Across cultures, views of temperament in infants varies greatly. From culture to culture the definition of an easy or difficult child changes dramatically. From interviews of mothers of small children from diverse cultural backgrounds, we examined the role of age, race, socioeconomic status, and marital status in varying views of temperament.

79. Light and Dark Imagery in James Baldwin's "Sonny's Blues"

Presenter(s): White, Alex **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

In the light people are able to brighten, illuminate, and enlighten their minds and souls. In the dark, however, some of their worst nightmares come true. But often times these roles are also reversed and in the light we are able to see our worst fears come to the surface. In James Baldwin's "Sonny's Blues", there is a very strong relationship between light and dark. Baldwin discusses the darkness of growing up in Harlem in the 1950's with the character Sonny and his brother and what traumatizing effects that lead to and how even after the boys had grown the darkness of that city seemed to always linger over them. Sonny discovered that through all his suffering in the dark he was able to find light in his music. Also, "Sonny's Blues" shows how we are able to understand others sufferings after we have traveled through the darkness ourselves. My research will focus on how light and dark are used in describing the setting and events in the characters past and present.

80. Homoerotic Behavior: Holmes and Watson in Hound of The Baskervilles

Presenter(s): Winburn, Miranda **Faculty Advisor:** Dr. Susan Cannata

Discipline: ***English***

In Hound of the Baskervilles by Arthur Conan Doyle, the main characters, Holmes and Watson exhibit a homoerotic behavior that has seized the attention of many readers. Homoerotic behavior is the erotic attraction of the same sex; in many cases, however, this behavior does not lead to sexual actions. In today's society it has been assigned to the terminology of "bromance." Throughout the text Holmes is rarely found in the presence of a woman, or another human being for that matter, unless the outcome will benefit the case. It's clear that Holmes prefers to stay hidden away from human interaction, other than Watson, unless such is needed to solve a mystery. Holmes and Watson also use more endearing terms when speaking to one another verses other people. For example when Holmes speaks to Watson he uses phrases such as "My dear Watson" or "My friend," however, it is very rarely, if any, does the reader find such affectionate words given to another. Considering the close proximity of these two male's emotional attachment, my research will consist of investigating the "accepted" or "normal" relationships among male companions in the late 1800's and see if the relationship between Holmes and Watson differ in any way from what was accepted by society.

81. The Effect of Biochar Soil Amendment on the Uptake of ICP by Tomato Plants

Presenter(s): Woods, Jaclyn **Faculty Advisor:** Dr. Siva Mandjiny

Discipline: ***Chemistry***

Biochar is created by heating organic matter to high temperatures in the absence of oxygen. It is a soil amendment with a porous surface that allows for retention of water/ nutrients and provides a protected environment for microbes. Most importantly, Biochar replenishes marginal soils with organic carbon. The hypothesis in this experiment is that imidacloprid, a systemic insecticide, will be bound to Biochar and not readily available for uptake by plants. In order to determine whether Biochar inhibits the uptake of ICP in tomato plants, a quantitative analysis of ICP concentration using high pressure liquid chromatography was undertaken. The third leaf from each plant was homogenized and centrifuged to produce a supernatant for the HPLC process. It was determined that 25.21 mg of ICP were present per 1.941 grams of plant material grown in 10% Biochar. From these results, it is evident that Biochar does not completely impede the uptake of ICP by tomato plants. Comparison of uptake at various Biochar concentrations is being determined. The future question for the continuation of this research revolves around determining how much ICP is present within the fruits consumed by the general population and how Biochar can be utilized to reduce this quantity for a safer level of consumption.

82. Peek-A-Boo with Jupiter's Moons

Presenter(s): York, Jason
Williams, Brandon

Faculty Advisor: Dr. Jose D'Arruda

Discipline: **Chemistry and *Physics***

We collaborated with Tomsk State Pedagogical University, to record the orbits of the Galilean Satellites of Jupiter. From the data we were able to collect we could calculate the longitude of our two locations. Using the orbits (ephemeris) for Jupiter's satellite transits (move in front) and occultations (move behind) that are accurate with the time at the Royal Greenwich Observatory, clocks can be synchronized to the observatories by watching the scheduled events. The difference between your local time and Greenwich local time reveals your longitude. We will present our data and our respective longitudes.

83. The Tiger Woods Affair: Dichotomy Between Soft and Hard News

Presenter(s): Young, Rachel

Faculty Advisor: Dr. Judy Curtis

Discipline: ***Mass Communication***

Several scholars have recently argued the definition of soft news has blended to create a "general" category of news. A content analysis has been performed that specifically looks at Tiger Woods' affair and how it was covered in The USA Today and Star Magazine. Examination of sixteen newspaper articles and twelve magazine articles, from November 1, 2009 to February 1, 2010, looked for specific buzz words (affair, private, transgressions, sponsor, and sex) that were selected to categorize the article as "soft" or "hard" news. Results show that "soft" news is predominantly focused on the gossip angle of the affair, while "hard" news covered the business aspect of the scandal.

84. Lysosomal Modulator Protects in Alzheimer's Disease Transgenic Mouse Model: Evidence of Enhanced Expression and Trafficking of Cathepsin B

Presenter(s): Young-Oxendine, Hollie
Howell, Rebecca

Faculty Advisor: Dr. Ben Bahr
Butler, David
Estick, Candice
Hwang, Jeannie
Kumar, Saranya
Charalambides, Ana
Wisniewskil, Meagan

Discipline: ***Biology***

Alzheimer's disease (AD) is an age-related neurodegenerative pathology in which defects in proteolytic clearance of amyloid  peptide (A) appear to contribute to the disease's progressive nature. Lysosomal proteases in particular the cathepsins exhibit up-regulation in response to accumulating proteins. We used the lysosomal modulator Z-Phe-Ala-diazomethylketone (PADK) to test whether proteolytic activity can be enhanced to reduce the accumulation events in AD mouse models. Systemic PADK injections in APPSwInd and APPswe/PS1E9 mice caused 3-8-fold increases in cathepsin B (CB) protein levels and 3-10-fold increases in the enzyme's activity in lysosomal fractions. The robust increase in CB activity was found in lysosomes isolated from the mouse neocortical

and hippocampal tissue after 10 daily treatments with 18mg/kg PADK (unpaired Mann-Whitney U-test: P<0.0001). The PADK-modulated CB also colocalized with LAMP-1-positive organelles, indicating proper trafficking to the lysosome compartment. Levels of neprilysin and insulin-degrading enzyme remained unchanged. The lysosomal modulation reduced A immunostaining as well as Ax-42 sandwich ELISA measures. Selective ELISA analyses also found that a corresponding production of the less pathogenic A1-38 occurs as A1-42 levels decrease in the two mouse models, indicating that PADK treatment leads to A truncation. Also associated with A clearance was the elimination of behavioral and synaptic protein deficits evident in the transgenic mouse models. To address the mechanism of PADK, enhanced expression as well as trafficking of CB was evident. First, the proform of CB exhibited an 80% increase by PADK (P=0.0296) while the mature forms of CB of 25-30 kDa showed more than a 200% increase by PADK (p<0.001). Second, Rab 5a and Rab 7 endosome markers also indicate enhanced trafficking. In hippocampal slice cultures, the PADK-mediated increase in CB was associated with a decrease in Rab 5a, a regulator of membrane traffic in the early endocytic pathway (t-test p<0.0001). Correspondingly, Rab 7 which controls late stage trafficking to lysosomes, exhibited a small but significant increase (P=0.0208 Mann-Whitney test). These findings describe a minimally invasive, pharmacologically plausible AD treatment for the enhancement of CB trafficking/activity to reduce A1-42 accumulation, possibly through truncation, and in turn offset the disruption of synaptic integrity and brain function.

Oral Presentations

1. The Impact of Healthcare Programs on the Unemployed and Uninsured

   Presenter(s): Cardenas, Morris **Faculty Advisor:** Dr. Lydia Gan

   Discipline: ***Economics***

   Health Care reform on the insurance coverage is one of the major topics in politics today. Unemployment and uninsured rates of the population have been on the rise each year. The unemployed people are unable to pay for their medical expenses and that put them in financial difficulty. A greater number of consumers are paying higher out-of- pocket expenses due to the increasing costs of healthcare. Meanwhile, governments around the world have created programs in order to help consumers pay off their medical expenses. There are "hidden" programs created by some government that consumers are unaware of. These programs are available to the public and they can help consumers pay off some of their debts and cover some other costs. However, most of the population does not know about these programs, thus they are neither being taken advantage of nor benefiting uninformed consumers. The motivation of this topic stems from the high unemployment rate that is currently at hand and the need for the provision of medical care for the unemployed as well as the employed workforce with low incomes. The objectives of my paper are: 1) To find out what programs are available other than insurance companies to help the unemployed contain their high healthcare costs. 2) To examine to what degree the medical field is accepting these programs. A lot of doctors or medical providers are not accepting these types of programs due to late payments by the government, or because of extreme liabilities. 3) To determine the role of the government in these types of programs. (WC: 259)

2. Absence of Morals and Ethics: Insider Trading

   Presenter(s): Davis, Erik **Faculty Advisor:** Dr. Rick Crandall

   Discipline: ***Business: Management***

   When it comes down to it, the absence of morals and ethics are the “meat and potatoes” of crises in a business setting. Everyday a variety of actions are taken by companies in direct opposition to the morals and ethics that should have been imbued by society. In this paper we will look at an example of an absence of these morals and ethics called insider trading. Included in this paper is an overview of insider trading, when it peaked nationally and the players who cooperated. We will also show how companies can generate moral and ethical ideas and concepts and utilize them in daily business practice.

3. On the Electroluminescent Quantum Energy Relation

   Presenter(s): Griffin, Austin **Faculty Advisor:** Dr. William Brandon

   Discipline: ***Chemistry & Physics***

   A consistent and suitably defined forward voltage, V elucidating the role played the Planck-Einstein relation for light emitting diodes (LEDs) as a first order electroluminescent quantum energy relation (i.e. eV = hf) was experimentally identified from the careful consideration of three major characteristics; spectral properties, geometrical properties, and operating conditions. Initial measurements indicate that the forward voltage is conveniently defined, for many types of LEDs, as the voltage at which the

relative output efficiency of the LED is a maximum. Apparently, in most LEDs, defining the forward voltage in this manner integrates some of the rather diverse and complex array of energy related phenomena as modeled for example by direct, indirect phonon assisted and exciton assisted transitions, defects, tunneling and nonlinear junction temperature effects- to name a few. Therefore, in some ways, this definition of voltage serves as an intensive variable.

4. To Share a Skin: The Truly Tragic Character of Edwidge Danticat's Breath, Eyes, Memory

Presenter(s): Hockaday, Maria **Faculty Advisor:** Dr. Michele Fazio

Discipline: ***English***

In Edwidge Danticat's novel, *Breath, Eyes, Memory*, readers follow the Haitian immigrant experience as it impacts a young girl's coming of age. Protagonist Sophie Caco leaves and later returns to her homeland of Haiti in an effort to discover herself. In a novel about race, gender oppression, and transnationalism, Danticat writes of the damaging aspects of sexuality. Sophie and the women who impact her life face great lengths of emotional and physical trauma from the opposite sex.

This presentation argues that the most complex and tragic storyline is that of Sophie's aunt, Atie, a seemingly minor character who ultimately finds the greatest form of love in a relationship with another woman. The unspoken lesbian relationship between Atie and her best friend Louise transcends the damaging heterosexual relationships that parade the novel and exists as the only healthy relationship Sophie witnesses. As an unmarried adult, Atie's freedom from traditional female values in a subservient society brings greater understanding to the ways in which love of self and love of homeland define women's voices and ultimately Sophie's character in Breath, Eyes, Memory.

5. "Honors Composition as a Site for Political Economic Literacy"

Presenter(s): Hudson, Christopher
Matthew Wright
Seth Stewart

Faculty Advisor: Dr. M.J. Braun

Discipline: ***English and Theatre***

The academic publication, *The Journal First Year Honors Composition*, "is a peer-reviewed academic journal … with the intention of being the national forum for collegial discussion of issues related to first-year honors composition." The JFYHC also calls for submissions written by students. Because past students' contributions to this academic journal do not follow the rigors of academic style and substance, the kind of work students submit appears completely disconnected from the academic work the professors submit to the journal. The three panelists hope that their submission to the JFYHC will spark a new direction for student submissions to the journal, one that represents students as co-researchers with their professors.

Panelists will discuss their submission on pedagogy, a type of research conducted by scholars in the field of rhetoric and composition. The panel assesses the effectiveness of our instructor's theme based pedagogy and the efficacy of choosing political economy as the course theme. The first speaker will discuss how the course was designed around the theme and which aspects of the design were effective in helping the student advance his/her writing and analytical thinking. The second speaker will discuss the high school experiences typical of honors students and how those high school conditions affected the students in this very challenging course. The third speaker will discuss individual conferences and

their effective use in enabling students to progress in their writing and analytical thinking. Concluding remarks will discuss the value of designing a course around political economy.

6. Exploring Percussion in Early Music

Presenter(s): Patterson, Jamie **Faculty Advisor:** Dr. Valerie Austin

Discipline: ***Music***

This presentation will demonstrate and explore the role of percussion in Early Music. Though there is a good amount of music preserved from the Middle Ages, no percussion music survived; therefore all performance gestures are based on assumption. This means that modern percussionists playing early music have nothing to refer to, so percussionists must improvise around the style of the music to keep a tempo for the ensemble. Through score analysis this presentation will show how the parts should be interpreted and performed.

This report consists of a comprehensive review of all known measurements allowing a comparison of the band gap parameters of water semiempirically determined from the dispersion of the refractive index-normalized Verdet constant. Previous measurements and calculations are reviewed, including an analysis of data readily available and overlooked by previous researchers. In addition, a magneto-optical apparatus was constructed and an independent set of measurements of the Verdet constant in liquid water was obtained. Justification for this endeavor hinges on the methodology for achieving a high degree of precision in calibrating such an apparatus and the insight afforded to interpret and weigh accordingly the results of the preceding measurements.

7. Medical Tourism in Mexico and the Philippines: A SWOT Analysis

Presenter(s): Oviedo, Nina Bianca **Faculty Advisor:** Dr. Lydia Gan

Discipline: ***Economics, Finance, and Decision Sciences***

Medical tourism is an industry that has been experiencing tremendous growth in recent years. It is an area of interest not only for the host countries (the suppliers), but also for countries with high medical costs (the consumers), which are typically industrialized countries. There is a need to study the nature of the industry within and across host countries to determine how this growth will lead to economic development in these destination countries. This paper will review the strengths, weaknesses, opportunities, and threats to the medical tourism markets in Mexico and the Philippines. A PEST (political, economic, social, and technological factors) analysis will be conducted within the context of each country to determine the socio-political stability of the market infrastructure and the obstacles to growth. These will provide further analysis of strengths such as government initiatives and country specialization, and weaknesses such as communication problems and travel risks. The analysis of opportunities explores the nature of alliances among various industries such as employers or insurance companies, healthcare providers, and medical tourism facilitators. It will also provide a comparison of the two countries by highlighting their comparative advantages, and how they differentiate themselves from other countries. Part of the threat analysis will focus on the competition faced by these two countries in the midst of major rivals (e.g. India, Malaysia, and Singapore, and Costa Rica) in the two regions. Finally, the research will consist of a review of existing literature as well as a review of the current policies and programs these countries are offering. These will identify aspects of the medical tourism market that each country can use to position itself to become a leading medical tourism destination in the region.

8. Hate Crime Laws

Presenter(s): Smith, Ashton **Faculty Advisor:** Dr. Monica Solinas-Saunders

Discipline: ***Sociology and Criminal Justice***

The intent of this paper is to examine all of the hate crime laws that have led up to the Matthew Shepard and James Byrd, Jr., Hate Crime Prevention Act. This paper is intended to show a historical progression of how the laws have shaped our society. Hate crimes are something that our society is faced with every day and in all honesty are pointless crimes. Hate crimes began with the discrimination of African Americans and has led up to the discrimination of gays. These laws are put in place to protect groups of people in our society.

9. Post Secret: In Their Own Voices

Presenter(s): Torrence, Josie **Faculty Advisor:** Dr. Michelle Fazio
Manello, Desiree
Spaulding, Tony
Menzel, Karen
Barnes, Nicole

Discipline: ***English***

In honor of April's designation as Sexual Assault Awareness Month and in conjunction with the Rape Crisis Center of Robeson County and UNCP's Office of Community and Civic Engagement, our multimedia presentation, which incorporates both film excerpts and narrative, seeks to raise awareness about sexual assault on and off campus. According to the U.S. Department of Justice, the National Institute of Justice reports that "3% of college women nationally have experienced rape or attempted rape during the academic year. This means, for example, that a campus with 6,000 coeds will have an average of one rape per day during the school year." However, 95% of these attacks go unreported. Films such as "For Colored Girls" and "Precious" graphically show representations of racial and gender violence and our project shifts the focus from the arts to lived experiences. "Post secret: In Their Own Voices" invites members of the UNCP community--collected anonymously through an online blog and in various mailbox locations throughout campus--to share experiences in order to create dialogue on campus. In keeping their stories in their own voices, we aim to begin a conversation about the realities of sexual assault in the hopes of ending the silence that surrounds this subject.

10. Medical Tourism in The Eyes of the Insurance Company

Presenter(s): Yang, Yi **Faculty Advisor:** Dr. Lydia Gan

Discipline: ***Economics, Finance, and Decision Sciences***

The purpose of this paper is to provide an overview of issues that insurance companies face in the consideration of offering health plan for medical services abroad. In the health care sector, one of the most notable developments in recent years has been the rise of medical tourism. Medical tourism is the phenomenon that people are seeking health care outside their own country. Many researches on this phenomenon have primarily focused on the perspective of the individual patients and their motivation to go abroad, and on legal perspectives. This paper focuses on the perspective of the private insurance companies in their decisions to join the globalization of health care. Although many instances

demonstrate potential for cost-saving when insurance companies offer their customers the options of having surgery abroad, a closer examination of other aspects of medical tourism shows that careful consideration is required in their decisions to offer such health plans. Apart from the rationale of cost-saving, other motivations such as increased demand, sufficient quality, supportive government policy and beneficial liability rules can be found. At the same time there are concerns about some disadvantages that may discourage insurance companies to join the bandwagon, these may include insecurity about the actual demand, risk costs like insecurity about quality and travel, and the question of ethics. The conclusion of the paper shows that medical tourism industry is too complex to assume that any insurance company can easily follow the development and even participate in it.

Notes

PURC Council

Ryan Anderson, Ph.D. Dept. of History
Anthony Curtis, Ph.D., Dept. of Mass Communications
Hal Davis, Dept. of Music
Tulla Lightfoot, M.F.A., Ed.D., Dept. of Art and Art Education
Jesse Peters, Ph.D., Dean – Maynor Honors College, Director – PURC
Lee Phillips, Ph.D., Dept. of Geology and Geography, Associate Director – PURC
Robert Poage, Ph.D., Dept. of Biology
Meredith Storms, Ph.D., Dept. of Chemistry and Physics

Progress Energy