

Poster Session

JSAC Ballroom 11:15-1:30

P1

Survey of Antibiotic Resistance of Bacterial Species in Canine Ears

Kristin S. Timmons, Department of Biology

Advisers: Dr. Richard Griner and Dr. Christopher Bates, Department of Biology

Recurring ear infections in canines are a common problem encountered in veterinary medicine and are usually associated with high bacterial growth in the ear canal. For this reason, we chose to examine the bacterial flora in the external ear canal of healthy canines and canines with infected ears. A survey was conducted using 24 randomly selected infected and non-infected canine ears. From these, over 40 bacterial colonies were isolated and were subjected to gram staining and disk diffusion antibiotic susceptibility testing. Most of the bacterial species isolated from the ears were gram positive and demonstrated increased resistance to several antibiotics. Specifically, 34% of the bacteria were resistant to sulfisoxazole, 32% were resistant to vancomycin, and 11% were resistant to ciprofloxacin. A lower incidence of resistance to streptomycin, doxycycline, and erythromycin was observed. The large percentage of vancomycin resistant bacterial species was highly unexpected since this antibiotic is not commonly used to treat ear infections in canines.

P2

Investigating a Rare Endangered Plant species: *Pediomelum piedmontanum* (Fabaceae)

Michael W. Nolan and Jonathan Walker, Department of Biology

Adviser: Dr. Stacy Taylor Bennetts, Department of Biology

P*ediomelum piedmontanum* (Dixie Mountain Breadroot) is a rare perennial herb that features only one known serpentine population in Columbia County, Georgia, where it is currently listed as a state endangered species. Reasons for the extreme rarity of this species are still unknown. However, we speculate that the metals present in the substrate may provide insight into its restricted growth habits. To further understand the rarity and ecology of *P. piedmontanum*, populations were monitored and seeds were collected in 2007 and 2009 from the Columbia County population. Seeds from both years were subjected to viability testing using tetrazolium chloride and different propagation techniques. As a result, 99% of the seeds were viable and those that germinated featured plant growth at a slow and steady rate. After six months, these plants were not full grown. In order to determine the extent of metal tolerance, seedlings were transplanted into a hydroponic system enriched with nickel, characteristic of serpentine soils. Findings from these experiments as well as population monitoring will contribute to the understanding of the population dynamics and increase awareness of this endangered species.

P3

A Novel Adaptation in *Phacelia dubia* var. *Georgiana* (Hydrophyllaceae)

Russell Ingram and Obinna Uchime, Department of Biology

Adviser: Dr. Stacy Taylor Bennetts, Department of Biology

Phacelia dubia var. *Georgiana* is a biennial herb endemic to granite outcrops. On the periphery of an outcrop, a local population is located in a weedy area adjacent to Columbia Road in Appling, GA. This roadside population was in flower in March, 2009, whereas a nearby population isolated at Kiokee Creek flowered one month later. This temporal difference in the reproductive maturation of two populations of *P. dubia* var. *Georgiana* is considered a novel adaptation. We hypothesized that this temporal change in flowering may be due to an adaptation for more rapid growth and early seed production in the weedy roadside area. In order to determine if there is a difference in growth patterns between the Columbia Road and Kiokee Creek populations, the two populations were grown together under the same environmental conditions. The results indicate that the Columbia Road population grows significantly faster than the Kiokee Creek population. Thus, there is evidence of genetic change in growth and development in the population alongside Columbia Road. The change in plant development may have resulted from greater competition in the weedy roadside area versus the more barren granite substrate.

P4

Analysis of Turtle Population Characteristics at Brick Pond Park

Wuraola Animashaun and Veneita Colclough, Department of Biology

Adviser: Dr. Brandon Cromer, Department of Biology

The study involved data collection on species of freshwater turtles at Brick Pond Park in North Augusta, SC. The purpose of this study was to evaluate population demographics (population size, sex ratio, body size, and home range) of freshwater turtles. The techniques employed included: turtle trapping, weighing, tagging and radio tracking. Trapping occurred during the fall of 2009 using three hoop traps baited with sardines. The length and width of each turtle was measured to calculate the turtles' size; the gender of each turtle was also recorded. The size and weight of each turtle was then compared on a basis of species and gender. All turtles were immediately released at the site of capture. The turtles were then classified based on gender and species along with the average calculations of weight and size. A T-test was done to compare the size of the female turtles to the male turtles. Four turtles were tagged and their movements were monitored from August to mid December 2009. The movements may be correlated to the availability of food and the diversity of predators. Samples were collected from the turtle scutes and claws; future research will involve mercury analysis of turtles inhabiting Brick Park Pond.

P5

Biological Survey of Amphibians and Reptiles at Brick Pond Park

Kelley A. Jonske and April Martin, Department of Biology

Adviser: Dr. Brandon Cromer, Department of Biology

Amphibians and reptiles are an integral part of ecosystems along the Savannah River. A biological survey of the newly constructed Brick Pond Park in North Augusta, South Carolina was conducted to determine the diversity of the amphibious and reptilian species present. The nine month study was conducted using various passive capture techniques such as; drift fences with pitfall traps, cover boards and baited hoop nets (turtle traps). Some active capture techniques were employed as well such as netting and hand catching, when possible. Along with the biological survey, an efficacy study as to which methods of capture were most effective was conducted. Each specimen was identified, measurements recorded, and then released. Data was

compiled as to which species were present and which method of capture was used for each. The data suggests that the species present are consistent with a typical piedmont forest ecoregion.

P6

Epiphytic Diatom Diversity Among Invasive Macrophytes in Lower Hier's Pond

Brandy Quarles, Dustin Hayden, and Jamie Campbell, Department of Biology

Adviser: Dr. Donna Wear, Department of Biology

We identified aquatic macrophytes in Lower Hier's Pond (Rae's Creek) and determined whether these species were native or non-native. The invasive status of non-native species was also determined. Slides of epiphytic diatoms of each plant species were prepared and diatoms were identified to genus. There were more non-native macrophytes in Hier's Pond than native species. Overall diversity of epiphytic diatoms was low when compared to a healthy stream system. The diversity of epiphytic diatoms was similar among native and non-native macrophytic species.

P7

Extraction of Energy from Microwind Powered Devices

Allen Black, Department of Chemistry & Physics

Advisers: Dr. Tad Whiteside and Dr. Andy Hauger, Department of Chemistry & Physics

There are many places in the world where people live without reliable access to electricity. This prevents access to simple luxuries, such as reading after dark or operating the village cell phone charger. The purpose of this research was to develop a device that could extract energy from microwind (wind < 5mph) using items that might commonly be found in a poor region of the world or items that are of such low cost, the cost of transport would not prevent someone living in one of those areas from purchasing one. To this end, we built several prototypes and have recently achieved success with one of the devices. The device has been tested in three locations throughout the CSRA to determine its ruggedness as well as to measure the amount of available energy throughout this region. Future work will refine and simplify this design as well as reduce the weight and increase the power output.

P8

P-Wave Slowness Anomalies Across USArray Determined by Beam Forming

Rebecca Sawyer, Department of Chemistry & Physics

Adviser: Dr. Christian Poppeliers, Department of Chemistry & Physics

We analyzed eleven teleseismic earthquakes recorded by USArray (a transportable seismic array) for back azimuth perturbations. We divided the earthquakes between South America and northeastern Asia. We formed virtual seismic arrays by using small subsets of the actual stations. For each virtual array we performed conventional beam forming analysis on the first arrival P-waves. For the eastern portion of the array, our analysis shows that for earthquakes originating from the south, the resolved back azimuths deviate to the east of the great-circle back azimuths, whereas for earthquakes originating from the north, the resolved back azimuths deviate to the west of the great-circle back azimuths. The opposite pattern exists for the northern portion of the array; earthquakes that originate from the south arrive at a back azimuth that deviates to the west of the great circle back azimuths, whereas for the earthquakes originating from the north the back azimuths deviate to the east of the great circle back azimuths. These observations are consistent with a near-surface seismic velocity

gradient across the array. We hypothesize that the near-surface velocity is lower in the middle of the array, with an increase in velocity on the eastern and western portions of the array.

P9

A Service Learning Project; Using Stories to Promote Diversity

Jessica Bell, Department of Educational Leadership, Counseling, and Special Education

Advisers: Dr. Paulette Harris and Dr. Alice Pollingue, College of Education

This poster will describe how ten undergraduate special education majors participated in a service learning project in the fall of 2009 at Reynolds Elementary School in Richmond County. The project's purpose was to examine if there were attitudinal changes in the children in general education classes after being read stories about children with disabilities. There were five teachers from the elementary school who volunteered to have the ASU students come into their classrooms to read the selected stories for grades pre-k-5. The collection of story books included a range of disabilities such as autism and ADHD. Pairs of students from ASU read the story to the class and created and conducted follow-up activities. After the children heard the stories, data were collected from attitudinal inventories administered to the children. Findings indicated that after hearing the stories and completing the follow-up activities, the children were more inclined to interact with children with disabilities. Teachers exposed to the stories became more aware of the need to include information about children with disabilities in their curriculum. The undergraduate special education majors gained experiences in reading to a large group of children as well as managing a large group in their follow-up activities.

P10

Synthesis and Fluorination of Various 1,3,5-Triarylpyrazoles

Ronnie Neil Jenkins, Jr., Department of Chemistry & Physics

Adviser: Dr. Chad Stephens, Department of Chemistry & Physics

Pyrazole derivatives have been commercially produced as medicines, pesticides, and dyes. Given such, their synthesis and modification with various functional groups has been of great interest in the chemical community, especially for analog synthesis. A particularly attractive group to incorporate is fluorine, which has been found to enhance metabolic stability, enhance binding efficacy, and increase adsorption and distribution of pharmaceuticals. Synthetic methods for direct fluorination of pyrazoles are thus of interest. In our research, we have been pursuing the direct fluorination of a series of 1,3,5-triarylpyrazoles. These pyrazoles were first prepared by oxidative aromatization of the corresponding pyrazolines by simply heating in DMSO in an open atmosphere in yields ranging from 70-85%. This technique was developed through the course of this research, as previously reported methods would have required expensive, toxic, and/or environmentally unfriendly reagents. These pyrazoles were then reacted with various N-F reagents in an attempt to directly fluorinate the 4-position in good yield. Based on our results, we have found that the best fluorination method involves reaction with N-fluorobenzenesulfonimide (NFSI) in hot chlorobenzene. Using this procedure, we have successfully synthesized and characterized a series of substituted 1,3,5-triaryl-4-fluoropyrazoles, obtaining purified yields of 20-29%.

P11

Making a home-owner device for producing BIO-CHAR from plant waste and calculating if this method is viable for carbon sequestration

Alexander Bauer, Department of Chemistry & Physics

Advisers: Dr. Charlotte Christy, Department of Biology

Dr. Hauke Busch, Department of Chemistry & Physics

Bio-char has been used as soil amendment for centuries. The purpose of this research is to build and test a device that is suitable for home-owner use, to evaluate the yield of charcoal and energy conversion efficiency, and then to produce a significant amount of charcoal that can be used in further research for soil fertility and determine if the process yields a net sequestration of carbon. The method employed for the pyrolysis will be the indirect or retort method, since it is cleaner than direct burning. In the retort method biomass enclosed in a container with no access to oxygen, which is then heated between 250° and 700° C. Most of the time, the gases produced are either burned off or caught to produce bio-crude. The container used here is a 13.5 gallon steel barrel wrapped with insulating material. Heat is supplied from the bottom through a gas burner and any vapors produced from inside the barrel are rerouted back into the fire. The container will be heated until all the raw material has been converted back into charcoal. Factors that have to be determined are conditions for maximum yield, energy input and net amount of carbon sequestered by this method.

P12

Conversion of a Petroleum Combustion Engine to Hydrogen Fuel

Jeremy Robinson, Phil Hines, Alexander Bauer and Richard Gamble, Department of Chemistry & Physics

Adviser: Dr. Hauke Busch, Department of Chemistry & Physics

The use of petroleum in combustion engines has numerous adverse environmental and economic consequences. By replacing non-renewable petroleum fuel with a clean and renewable fuel, these problems can be avoided. Previous projects have demonstrated the generation of clean hydrogen gas for which to power a fuel cell or combustion vehicle. This project will use hydrogen gas to power a commercial combustion engine, previously suited for petroleum fuel. The exothermic reaction of hydrogen with atmospheric oxygen will provide the required energy, and will produce only water and heat as a result of the process. A variety of aspects of the engine's performance will be analyzed to indicate the feasibility of this technology. In particular, the dependency of engine power and maximum efficiency upon ignition timing and injection parameters will be explored using a two cylinder 1983 Suzuki GS300L motorcycle with commercially available hydrogen gas.

P13

High Resolution, Ground Based Magnetic Data at Dagger Mountain, Big Bend National Park, TX

Christopher Parham

Adviser: Dr. Christian Poppeliers, Department of Chemistry & Physics

We present results of an extensive, ground-based, high-resolution magnetic survey of a portion of Dagger Mountain, located in Big Bend National Park, TX. Dagger Mountain is a large map-scale anticline south of the Dog Canyon area. Previous work suggests that the topographic expression of this Dagger Mountain is due to purely structure deformation of the Cretaceous-aged rocks. However, an alternate hypothesis is that Dagger Mountain is cored by a map-scale intrusion of Tertiary-aged rocks similar to those seen in outcrops in the immediate vicinity of Dagger Mountain. Based on two lines of evidence, we favor the former hypothesis. First, structural data obtained during a field mapping campaign yields structural data that is consistent with Dagger

Mountain being a map-scale anticline that is oriented favorably with regional Laramide-type deformation. Second, high resolution magnetic data do not support the hypothesis that Dagger Mountain is cored by Tertiary-aged intrusive igneous rocks.

Oral Presentations

JSAC Ballroom, Butler Room, Hardy Room and Coffee House

Ballroom (BR)

BR1, 1:30 Open

BR2, 1:45

Doris Newman

Comparing Southerner's and Northerner's Attitudes About Violence and Gun Ownership

Department of Sociology, Criminal Justice and Social Work

Adviser: Dr. Kim Davies

Past studies have shown southerners are more in favor of corporal punishment, gun ownership, and fighting than non-southerners. In this study, I used a sample of over 400 college students at four universities to explore whether these differences still exist by comparing southerners' and non-southerners' attitudes towards gun ownership, corporal punishment, and fighting. The results show that southerners were more (not less) likely to favor corporal punishment and gun ownership. There is not a pattern of significant difference between southerners and non-southerners regarding fighting.

BR3, 2:00

Katherine McCann

A Regional Analysis of Policing Methods in Policing Domestic Violence

Department of Sociology, Criminal Justice and Social Work

Adviser: Dr. Kim Davies

In this paper, I compared methods of policing domestic violence in the southern United States and the northern United States. My research indicates that the culture of these two regions appears to have a good deal of an effect on how the police feel about domestic violence and these views in turn shape what protocol they use when responding to a domestic violence related call. Northern police departments appear to have more exacting protocols available. While Southern have less publicized protocols or they appear to emphasize the protection of police officers. The results are discussed in terms of Nisbet and Cohen's Southern Subculture of Honor Thesis.

BR4, 2:15

Curtis Fease

When is Hate Allowed to Prosper?

Department of Sociology, Criminal Justice and Social Work

Adviser: Dr. Kim Davies

This article investigates whether there is a disparity between the level of hate groups in an area, and the amount of effort that the area puts forth to document and fight hate crimes. Previous research seems to imply that the South would be more accepting of both hate groups and hate crimes. I hypothesize that the Southern region of the United States will have higher rates of hate groups than other regions, and also have less hate crime training for police officers and fewer laws protecting targeted groups. Data is used from the Southern

Poverty Law Center and the Anti-defamation League to create rates per 100,000 of hate groups in an area, percentages of people who live under hate crime laws in an area, and people who live in an area where hate crime training is provided to police officers. Analyses prove that the South has more hate groups, less hate crime training for police, and more people living in areas with no hate crime laws than other regions in America. Social control is presented as a possible explanation for these differences.

BR5, 2:30

Eric Hardy
Something on My Mind
Department of Music
Adviser: Dr. Robert Foster

I submit for examination my original jazz composition entitled Something on My Mind. There is an inherent challenge in writing music. Writing a score for a group only increases the difficulty. The task requires one to produce a work that is engaging for the performers as well as the listening audience. Further complicating the process is that the instruments themselves are in different keys. A saxophone in E-flat playing a written “C” has a different pitch than a B-flat trumpet playing the same written “C”. This requires the composer to produce written lines of music in various keys specific to each instrument. A good melodic line, with harmonic support, brings a blend of voice that produces contrast, counterpoint, and contrary musical motion. These elements must be combined along with a rhythm and chord structure that is driving and theoretically correct. In addition to the structured form written, there is the improvisational requirement of jazz to be introduced as well. Something on My Mind brings together these various points and it would be my pleasure to have the ASU Jazz Ensemble perform it for your listening pleasure.

2:45 Break

BR6, 3:00

Maitri Desai
Helicon Waves in Metallic Media
Department of Chemistry & Physics
Adviser: Dr. Trinanjan Datta

We explore the low frequency electromagnetic wave propagation in metals. These waves are known as helicon waves. We investigate the behavior of the helicon in the presence of linearly, circularly, and elliptically polarized electric fields. In addition, we also compute the frequencies of the helicon waves for all the above cases.

BR7, 3:15

Philip Javernick
Phase Synchronization Effects in a Lattice of Chaotic Oscillators
Department of Chemistry & Physics
Adviser: Dr. Trinanjan Datta

We investigate the effects of phase synchronization in a lattice of weakly coupled chaotic oscillators. We find that in the synchronous state the phases of the oscillators are locked. In the non-synchronous state the phases are either zero (oscillation quenching) or the difference between the phases is non-zero. We explore the synchronization behavior by computing the phase synchronization plot for the interaction parameters of the chaotic system. We also explore the effects of a spatially varying coupling on the phase synchronization in the lattice of coupled chaotic oscillators.

BR8, 3:30**Jeremy Barry**

Transfer Matrix Method for 1D and 2D Ising Model

Department of Chemistry & Physics**Adviser: Dr. Trinanjan Datta**

The Ising model offers a way to simulate the behavior of magnetic materials. We focus on the classical 1D and the classical 2D Ising model and reproduce the solutions using the transfer matrix method. The transfer matrix approach offers an exact solution. Using periodic boundary conditions we compute the free energy, entropy, and heat-capacity for both the 1D and the 2D model. We also compare and contrast the effect of next-nearest neighbor interactions on the free energy of the 2D Ising model.

BR9, 3:45**Lindsay Hilkert**

Synthesis of a Cyclopentyl Derivative of an Antiprotozoal Reverse Diamidine

Department of Chemistry & Physics**Adviser: Dr. Chad Stephens**

The current chemotherapies for the treatment of tropical protozoal diseases such as Leishmaniasis and Chagas Disease are limited by the hazardous method of intravenous administration and mammalian cytotoxicity. Currently, research is being conducted into the antiprotozoal activities of several analogs of a reversed diamidine compound, DB766, which was synthesized originally at Georgia State University. The compound and its analogs are able to be administered orally in the salt form, and have shown low cytotoxicity when tested. A previously synthesized analog has a thiophene ring center, and an isopropyl benzene ring adjacent to the reverse diamidine terminus. The analog synthesized here substitutes a cyclopentyl ring for the isopropyl group. To synthesize the compound, we prepared the cyclopentyloxy benzene ring by reacting 2-bromo-5-nitrophenol with bromocyclopentane. This ether compound was then added to the thiophene center via a Stille coupling reaction with 2,5-bis(trimethylstannyl)thiophene. The nitro groups of the resulting product were reduced to amines and then converted to reverse amidine groups. The product was converted to the mesylate salt and characterized by IR, NMR, and elemental analysis. The product will soon undergo external testing to determine its activity against the protozoa in comparison to DB766 and previous analogs.

BR10, 4:00**Zoe Renew**

Synthesis of C-Substituted Bicyclic Sulfones as Potential HHV-6 Inhibitors

Department of Chemistry & Physics**Adviser: Dr. Chad Stephens**

Human herpesvirus 6 (HHV-6) is one of the eight known members of the human herpes virus family. Infection with HHV-6 is a major cause of opportunistic viral infection in the immunosuppressed. Research also suggests that this virus may be an underlying cause of many diseases such as epilepsy, multiple sclerosis, chronic fatigue syndrome, and some cancers. Currently there are several drugs used to treat HHV-6, however they generally have high toxicity and there is an emergence of resistance to them. Therefore it is important to find new therapeutic measures to change the course of the HHV-6 viral infection. Recently, a bicyclic sulfone has been developed in our laboratory in collaboration with a virologist at the Rega Institute in Belgium that has been shown to greatly inhibit HHV-6. The purpose of our research is to synthesize new derivatives of the bicyclic sulfone in order to identify a more potent inhibitor. Thus far, five new compounds have been

synthesized which contain alkyl groups or a fluorine added at an acidic C-H site within the molecule. These new compounds will soon be tested by our collaborator for activity against HHV-6.

BR11, 4:15

Phillip Wilkerson

Chemoselective Reduction of 1-Cyanomethylsulfonyl-2-nitrobenzene, an Intermediate to Potential HHV-6 Inhibitors

Department of Chemistry & Physics

Adviser: Dr. Chad Stephens

As part of an effort to prepare new bicyclic sulfones as potential Human Herpes Virus 6 (HHV-6) inhibitors, we needed to reduce the nitro group of the title compound to the corresponding amine. In our attempts to do this, three different reduction methods have been developed, each giving a different major product. First, dissolving metal reduction using iron in acetic acid unexpectedly gave a bicyclic lactam arising from nucleophilic addition of the amine to the cyano group subsequent to reduction. Next, catalytic hydrogenation using Pd/C at standard pressure gave a mixture of the hydroxylamine, via partial reduction, and the desired amine. Upon further investigation, complete reduction to the amine was only achieved by using large amounts of Pd/C catalyst, higher than normal pressure (~90 psi), and dichloromethane as solvent. On the other hand, the intermediate hydroxylamine could be selectively obtained by using Pt/C instead of Pd/C, an ethanol/ethyl acetate solvent mixture, and very low hydrogen pressure. For proof of structure in this case, O-acylation of the hydroxylamine product gave a crystalline ester which was subjected to X-ray structure analysis. Finally, with the desired amine in hand, new bicyclic sulfones have been prepared and are awaiting testing against HHV-6.

Butler (B)

B1, 1:30

Beverly Breeland

Effects of Studying Abroad on University Retention and Student Engagement

International Affairs and College of Education

Advisers: Dr. Holly Carter and Dr. Judi Wilson

Studying abroad allows student to experience another culture first hand and gain experiences and knowledge that cannot be learned in a classroom. The study abroad office at Augusta State University has been providing these opportunities to students since 2005, and has seen a steady increase in student participation since that time. Data from these years has been collected to determine if studying abroad affects retention of students at the university by engaging them with the university. Enrollment status, SAT and ACT scores, race, and gender has been collected and compared to the university's average. It is hypothesized that the study abroad office has the same demographic as the university and that the study abroad opportunities offered at ASU give students a reason to stay with the university.

B2, 1:45

Eve Winkleman

This Fragile Thing Out of Futurity: Deconstructing Time and Space

Department of English & Foreign Languages

Adviser: Dr. Todd Hoffman

In H.G. Wells' novel The Time Machine, the Time Traveller refers to Time as another dimension of Space, in effect deconstructing the binary opposition of Time and Space as separate concepts. This paper uses literary criticism and basic algebra to examine several apparent paradoxes brought up by this deconstruction and explores the implications of viewing a life as a series of interrelated instances relative to each other, forming a

cohesive whole. It also examines the chronological difficulties of time travel and the possible consequences of viewing past, present, and future as “fixed” or unchanging.

B3, 2:00

Nino De Laurentys and Jamie Kimball
A New Perspective of the Spanish Conquest by Merging Disciplines
Department of English & Foreign Languages
Adviser: Dr. Jana Sandarg

One of the goals of liberal arts universities, such as Augusta State, is to ensure its students receive a well-rounded education by providing a variety of outlooks of pertinent topics in order to ensure a deeper understanding of those topics. In our presentation we explain how our perspective of the Spanish conquest was shaped by studying information from history and anthropology textbooks written by Americans and from a cultural textbook written by a Latin American. Our unique perspectives enriched an in-class debate in the Fall of 2009 about the Spanish conquest, a debate which was carried out entirely in Spanish.

B4, 2:15

Melissa MaConney
Using Self-Monitoring to Increase Math Accuracy, Productivity and On-task Behavior
College of Education
Adviser: Dr. Carolyn Stephens

Many children with attention deficit hyperactivity disorder (ADHD) or other disabilities which affect concentration have difficulty completing work and staying on-task. A changing criterion design study was used to evaluate the effects of self-monitoring for one elementary student who rarely completed math assignments independently. The researcher recorded the number of correct math problems independently completed during each session. With the use of self-monitoring, the student gradually increased her accuracy in a step-wise fashion across thirteen sessions during the study. Productivity and on-task behavior also improved with the implementation of self-monitoring. The results of the current study were similar to other studies in the research literature indicating that self-monitoring is an effective strategy for improving accuracy, productivity, and on-task behavior.

B5, 2:30

Adam Shedd
Acculturation of First Generations Immigrants in CSRA
Department of Political Science
Adviser: Dr. Augustine Hammond

The acculturation of immigrants groups into mainstream American society tends to be beneficial to the American society. However, little research has been conducted on the acculturation of immigrant groups in the Central Savannah River Area (CSRA). This paper explored the level of acculturation of Indian-Americans and Muslim-Americans in the CSRA. Specifically, it used survey data to examine the role of religion, parenting and social networking in the acculturation of first generation Muslim-Americans and Indian-Americans in the CSRA. Results from the study revealed that religion was not overly important in transmitting cultural values from one generation to the next, but parenting and social-networking were found to play a key role in acculturation of first generation immigrants. Though the Muslim-American and Indian-American community tried to preserve their cultural traditions, the first-generation immigrants are also affected by Americanization.

2:45 Break

B6, 3:00

Travis Wagner

From Caballeros to Immigrants: Latin America in Hollywood

Department of History, Anthropology & Philosophy

Adviser: Dr. Heather Abdelnur

American understanding of foreign nations ties directly to their constructions of unfamiliar cultures within popular media, most notably through Hollywood. Latin American is certainly no exception to such influences. It is apparent that Hollywood fabrications of Latin America have had considerable influence on popular conceptions of the countries, as well as an equally notable effect on Inter-American affairs. Images of Latin America vary from positive images of Latin America as a paradise in The Three Caballeros (1954) to the more negative images in Guys and Dolls (1955). Hollywood also provides a variety of commentaries on immigration to the United States from Latin American countries whether the Puerto Rican immigrants from West Side Story (1961), or the Guatemalan refugees from El Norte (1983). The purpose of this presentation is to discuss a group of American films released between 1943 and 1983 for their commentaries on Latin American nations. The discussion will focus on not only Latin American societies, but Inter-American relations as well. Finally, an in-depth comparison of the previously mentioned film El Norte with descriptions of the Guatemalan War will serve as a detailed example of how American films are able to recreate the imagery associated with such events.

B7, 3:15

Jamie Kimball

Impact of Irish Ingleses on Latin America

Department of History, Anthropology & Philosophy

Adviser: Dr. Heather Abdelnur

The impact of Irish immigrants in Latin America is an aspect of Latin American history that has often been overlooked by historians. However, recent research has brought to light new evidence of the importance of the Irish and their effect on Latin American society. My presentation clarifies who the Irish immigrants were in terms of class and occupation, and examines their reasons for leaving Ireland and coming to Latin America. Furthermore, my research explores the effects that these Irish immigrants and their descendents had on the economy, the military, politics, religion and society in Latin America from the Independence era through the early twentieth century. My research includes both secondary and primary sources, such as newspaper articles, journal entries and literature from the time period. I will argue that, despite indications of comparatively low Irish immigration numbers, Irish immigrants and their descendents impacted almost all aspects in Latin America.

B8, 3:30

Robin Scheff

Out and About: Jewish Women in the Early Modern World

Department of History, Anthropology & Philosophy

Adviser: Dr. Wendy Turner

By the year 1500, most of the world's Jews lived in a swath from Poland through southeastern Europe and into Turkey, northern Africa, and other parts of the Ottoman Empire. This gave Jewish women a unique opportunity to connect with both Christian and Muslim women. At a time when most women, no matter their religion, were basically confined to their homes, numerous Jewish women used these interreligious connections

to create businesses and become involved in the outside world. My paper looks at how Jewish girls were raised, family and communal expectations, and Jewish women who broke the mold in business, education, and religion.

B9, 3:45

Melinda McKew

WWII Propaganda and the Problems of Homeless Daughters, Sexual Women and Masculine Lesbians in *So Proudly We Hail*

Department of Communications & Professional Writing

Adviser: Dr. Gaye Ortiz

In my paper, I analyze the ways in which Mark Sandrich's *So Proudly We Hail* (1943) functions as a WWII propaganda film that elicits female participation in WWII by assuaging societal fears of homeless daughters adopting hypersexual or homosexual identities. As young unmarried women, the nurses in the film proved problematic for mid-twentieth century gender roles and norms, particularly those governing femininity. The entrance of women into the military created tensions within American society, for military women would be outside the confines of the home and parental supervision and prone to hypersexual or homosexual activities. Consequently, the film must mitigate audience members' potential fears. Sandrich does so through a variety of narrative mechanisms, which include the recreation of a symbolic amplification and negation of female heterosexual activities. In this manner, the film upholds patriarchal and heteronormative social structures and attempts to assuage audience members' fears of homeless daughters, sexual women, and masculine lesbians.

B10, 4:00

Brian Williams

Journey Across the United States: Analysis of Regional Newspapers

Department of Sociology, Criminal Justice & Social Work

Adviser: Dr. Kim Davies

Over the years, it has been speculated as to whether or not the southern region of the United States is more violent than its northern and western counterparts. Some studies have indicated that both the western and southern regions are equal in violence, while others still cling onto the fact that the south remains the most violent part of the United States. The purpose of the current study was to analyze three different online newspapers from the three different regions of the United States (south, west, and north). The states chosen for each region were all randomly selected, using their capital city online newspaper websites (Oregon, Louisiana, and New Hampshire) to determine if there were any violent-sounding titles, focusing particularly on crimes against persons. Results showed that even with random selection of states and their associated newspaper articles, Louisiana still had the highest amount of violent articles published within its source, *The Advocate*. Results are discussed in terms of the southern subculture of violence thesis.

Hardy (H)

H1, 1:30

Ryan Hawkins

Attempted Oxidation of Pyrrolo[2,1-*b*]quinazolines with Formation of a Stable Epoxide

Department of Chemistry & Physics

Adviser: Dr. Chad Stephens

Vasicinone is a bioactive tricyclic compound with many pharmacological properties. Our research has consisted of exploring the synthesis and chemistry of new compounds related to this natural alkaloid. Our starting materials are pyrrolo[2,1-*b*]quinazolines, readily synthesized via an intramolecular N-arylation of some 2-aminopyrroles. The original object of our research was to oxidize the dihydro version of these tricyclic compounds to a fully aromatic, tricyclic system, but this has been unsuccessful thus far. However, during the course of this research, a chemical reaction with air was observed when our starting tricyclics were dissolved and stored in acetone for TLC. After about 10 days, the product was isolated. The tricyclic underwent what appears to be a very unique reaction with atmospheric oxygen in which an alcohol group and an epoxide were formed. The structure of this interesting product was verified by IR, ¹H-NMR, ¹³C-NMR, elemental analysis, and X-ray crystallography. Performing the reaction under pure oxygen instead of air increased the rate of formation of the epoxide-containing compound from about 10 days to about 4 days. Future research will explore the unique epoxide-forming oxidation reaction, reactions involving the epoxide, and the original objective of finding an appropriate method for dehydrogenating the pyrrolo[2,1-*b*]quinazolines.

H2, 1:45

Joy Harris

Synthesis of 2-Aminofluorene Derivatives as an Organic Chemistry Laboratory Project

Department of Chemistry & Physics

Adviser: Dr. Chad Stephens

In this research, we have been trying to develop a multi-step laboratory project for the organic chemistry laboratory involving the synthesis and subsequent reactions of 2-aminofluorene. This project will demonstrate multi-step synthesis to students and allow for more of a project-based laboratory curriculum. The first step of the research project involves nitration of fluorene. In this step, fluorene is reacted with nitric acid in acetic acid to give 2-nitrofluorene. Next, the nitro group is reduced by refluxing with tin (II) chloride in ethanol. This reaction gives the amine product, 2-aminofluorene. Then, the amine can be converted to a number of derivatives, including an acetamide, a benzamide, or an imine. While the two amides are formed by conventional means in solution, the imine product is formed by grinding the two reagents together without solvent, which illustrates an environmentally-friendly "green" approach. Future work now underway will focus on reducing the imine to the alkylated amine, and on developing a diazonium reaction using 2-aminofluorene as substrate.

H3, 2:00

Jacob Magoulas

Synthesis of 1,2-Benzoquinone Derivatives

Department of Chemistry & Physics

Adviser: Dr. Shaobin Miao

Organic semiconductors have caught the attention of many in world of electronics. These semiconductors show a bright future in various electronic devices such as cell phones, televisions, computers, and many others. In my talk I will discuss the importance of organic semiconductors as well as how and why the derivative of 1,2 Benzoquinone that I am currently working on will be a very valuable intermediate for the synthesis of various organic semiconductors.

H4, 2:15

Jamie Campbell
Electrical Circuits and Random Walk
Department of Chemistry & Physics
Adviser: Dr. Trinanjan Datta

Kirchhoff's laws, which are statements of conservation of energy and charge, can be used to compute the currents flowing through an electrical circuit. Relying on the property that current cannot build up anywhere in a circuit we show that the electrical currents can also be obtained using the idea of a random walk. The random walk method predicts the ratio of currents flowing in a branch of a circuit by calculating the probabilities of different paths for a current to travel. We will apply the random walk method to the case of a Wheatstone bridge circuit as verification.

H5, 2:30

Craig Atkins
Synthesis of Analogues of Dapsone as Potential DNA Binding Compounds
Department of Chemistry & Physics
Adviser: Dr. Chad Stephens

The transcription and regulation of DNA is naturally affected by molecules in the cell which bind to the double helix. Synthetic compounds which bind to DNA have the potential to either inhibit or stimulate its activity by blocking or promoting the binding of the molecules which normally regulate the DNA. Several synthetic compounds described in the literature have been shown to have this capability, but expansion of the current list of compounds available for this purpose is of interest. Novel compounds could have better sequence specificity, binding affinity, or cellular uptake than current compounds. In this research, several differential analogues of the leprosy drug dapsone have been synthesized in hope of identifying compounds which bind DNA efficiently and selectively. Various dicationic compounds were synthesized; purified; characterized by FT-IR, ¹H-NMR, ¹³C-NMR, and elemental analysis; and subsequently delivered to Dr. Karen Buchmueller at Furman University to be analyzed for binding to DNA. This capability to control the activity of DNA using synthetic organic compounds has myriad implications for industry, medicine, and biotechnology.

Break

H6, 3:00

Holley Burke
3-Arylfuran "Reversed" Amidines as Potential Inhibitors of Leishmania and Trypanosoma Cruzi
Department of Chemistry & Physics
Adviser: Dr. Chad Stephens

Leishmania and trypanosoma cruzi, both protozoal organisms, affect 12 million people in rural areas all over the world. These organisms are transmitted to humans by a carrier insect, through blood transfusions, or contaminated needles. If left untreated, the infections can be fatal. Chemotherapy is currently the most effective method of treating these diseases. However, the available drugs show high levels of toxicity to humans and reduced efficacy due to emergence of protozoal resistance. For these reasons, it is desirable to develop a more effective, less toxic drug to treat infections. 2,5-Bis[(2-pyridylimino)aminophenyl]-3-phenylfuran has already shown activity against the organisms. Research also indicates that many diamidine compounds show low toxicity to mammalian cells. The purpose of our research is to synthesize various 3-arylfuran "reversed" amidines in order to investigate their potential anti-protozoal activity. The first step in the reaction scheme is a chalcone synthesis. Next, a Stetter reaction is performed to yield a 1,4-diketone, which is cyclodehydrated to give the 3-phenylfuran product. Then a palladium catalyzed amination reaction is used to substitute the bromo groups with amino groups. Finally, the "reversed" diamidine is obtained by treating the diamine with a thioimidate naphthyl reagent.

H7, 3:15

Justin Agee

Lunar Cycle Effects of Anchoamitchilli, The Bay Anchovy

Department of Biology

Adviser: Dr. Bruce Saul

Anchoa mitchilli, the bay anchovy, is a small prey fish that is associated with marine and estuarine environments. The goal of this research project was to determine the effect of lunar cycles on the abundance of these prey fish during the spring months of March, April, and May. This study will help us gain an understanding of the habits of the anchovy, determine food availability for game fish species, and ascertain a measure of population variability. The collections were performed on St. Catherine's Island, a barrier island located on the coast of Georgia that is dedicated to research and education. Samples were taken monthly for a ten-year period from 1998 through 2008, using various seining techniques. Analyses were performed by first establishing a baseline of anchovy sizes. It was necessary to eliminate reproductive surges in the population and limit subsequent analyses to the adult prey fish. The sorted data was compared to lunar cycles provided by the National Aeronautics and Space Administration website. The information was then examined to determine any cycles, trends, and relationships. Data analyses reflect an association between lunar cycles and bay anchovy abundance during the spring months.

H8, 3:30

Nuvonka Wilson

Effects of Modified Diet on Red Claw Crayfish Growth

Department of Biology

Adviser: Dr. Bruce Saul

Cherax quadricarinatus, the red claw crayfish, is economically important because it displays lobster-like characteristics, but is easier to grow and harvest. The purpose of our research is to study the effects of a modified diet on the growth of the red claw crayfish. This information could be useful in the commercial farming and harvesting of the red claw crayfish. Twenty-eight crayfish hatchlings were separated into three interconnected 50-gallon aquaria. All were outfitted with the same number and types of hiding places, a necessity in reducing cannibalism. The water temperature was kept at an ideal 81° F. Each group was placed on one of three different diets: (1) shrimp pellets (the standard diet), (2) potatoes and carrots, and (3) a combination of shrimp, potatoes, and carrots. The hatchlings were fed twice a week and weighed every 2 to 3 weeks. We found that the shrimp pellet diet induced growth at a faster than the other two diets. However, the crayfish on the combination diet (pellets and vegetables) exhibited less cannibalism.

H9, 3:45

Chalisa Nestell

Does the Local Spider Flora Carry Pathogenic Bacteria?

Department of Biology

Adviser: Dr. Cathy Tugmon

It is well documented that a number of animal species serve as mechanical vectors for pathogenic bacteria. Little research however, has been conducted on the role of spiders in this relationship. Our primary interest was to determine if spiders carry pathogenic bacteria. We collected more than 200 spiders from urban and rural areas in and around Augusta. At the time of capture, spiders were immersed in sterile tryptic soy broth. This

broth was incubated and individual bacterial colonies were isolated. Species identification of bacteria and determination of antibiotic resistance were performed by Mullins Laboratory (Augusta, GA). Over 20 different species of bacteria were identified. Our data suggest that spiders can carry potentially pathogenic bacteria but the majority of these bacteria have little or no antibiotic resistance.

H10, 4:00

Megan Clendenning

Differentiation of the Muller-Glial Cell Line, rMC-1

Department of Chemistry & Physics

Adviser: Dr. Barbara Mysona

The Müller cell is the main glial cell in the retina of the eye. In order to study these cells in vitro, primary Müller cells are typically isolated by a time-consuming process that requires many live animals. In place of primary cells, the Müller cell line, rMC-1, is commonly used by retinal researchers. Although rMC-1 cells reproduce rapidly, their growth characteristics and cell morphology are quite different than primary Müller cells. Published studies report that the kinase inhibitor, staurosporine, induces differentiation in the retinal ganglion cell line, RGC-5. The purpose of this study was to test whether staurosporine induces differentiation in rMC-1 cells. The rMC-1 cells were treated with varying concentrations of staurosporine. Digital images of morphology changes were recorded at various time points and compared to vehicle treated controls as well as to primary Müller cells. Criteria were developed for evaluating the observed morphology changes associated with rMC-1 differentiation. Subsequent cell measurements and data analysis revealed that treated rMC-1 morphology more nearly reflected the morphology of primary Müller cells; however, these changes were accompanied by some cell death. Although staurosporine appears to induce a more differentiated rMC-1 morphology, its usefulness is limited by decreased cell viability.

H11, 4:15

Jeremy Robinson and Maitri Desai

The Effects of Curcumin on Beta-Amyloid Aggregates

Department of Chemistry & Physics

Adviser: Dr. Donna Hobbs

The aggregation of β -amyloid protein is believed to be integral to the development of Alzheimer's disease. The nucleation of these pathogenic aggregates begins with the folding of the amyloid peptide in the brain. The increasing presence of β -amyloid fibrils in the brain produces rapid degeneration of cognitive function. Curcumin, a potent chelate found in the spice turmeric, aggressively binds with a variety of proteins including amyloids. Because curcumin, unlike other aggregate-inhibiting compounds, is non-toxic and readily crosses the blood-brain barrier, it might have potential for the treatment and/or prevention of Alzheimer's disease. Our experiment uses polyacrylamide gel electrophoresis to explore the binding of curcumin to the β -amyloid protein and, subsequently, curcumin's ability to inhibit formation of aggregates or degrade existing aggregates in vitro

Coffee House (CH)

CH1, 1:30

Gabrielle Salley

Illegal Immigration in Aiken County: Costly or Not?

Department of Political Science

Adviser: Dr. Sandra Reinke

Since a significant Hispanic population is undeniably present in Aiken County, I examine whether or not its presence has a notable effect on the county's economy. As the United States has been declared in economic

recession, it is plausible that illegal immigration has grown in its fiscal impact on individual economies, such as Aiken County. As this is the case, this investigation examines the entities deemed pertinent components, determinants, and participants in Aiken's economic arena. My hypothesis is as follows: no significant impact will be measurable as a result of a lack of information as illegal immigrants are an undocumented people the research reports the results of the investigation of the individual entities determined to be economic agents.

CH2, 1:45

Gerry Dillon

The Effects of Outsourcing on The U.S. Economy

Department of Political Science

Adviser: Dr. Randall Miller

The outsourcing of U.S. jobs to foreign workers is placing our country at an intellectual disadvantage and increasing domestic poverty. The types of job losses are not limited to only those with minimal job skills, but also include those in computer and technology industries. The problem has created revenue shortfalls for the U.S. economy and will increase America's dependence on foreign workers. I am interested in examining the compounding negative economic effects that outsourcing creates through lost jobs, decreased technical ability, dependence on foreign workers, steady declines in revenue, and national security risks. Ultimately, U.S. policies on education, lost revenues, immigration reform, tort reform, tax laws, and economic insecurity must be reformed to limit the downward spiral that the cost will nation its economic standing and security in a new technological age.

CH3, 2:00

Sharron Landy

Tax, Professional Internships & Subsequent Professional Performance

James M. Hull College of Business

Adviser: Dr. Phillip Siegel

How do internships influence the socialization and performance of accounting students employed in the tax department of a CPA firm? Previous research on accounting internships primarily focuses on auditing personnel. There is evidence in the literature that indicates audit and tax professional have different work cultures. This paper examines the relationship between internships and subsequent professional performance of tax professionals as measured by promotion velocity and employee turnover. The human resource departments from seven regional CPA firms, with similarly structured internship programs, provided performance, promotion and turnover data on employees who completed internships and employees who did not. The results of the study indicate that internships positively affect performance evaluations, promotions, and employee retention of tax professionals.

CH4, 2:15

Nancy Dillard

Tally it Up: The Evolution of Internal Controls is Ongoing

James M. Hull College of Business

Adviser: Dr. Phillip Siegel

This paper will draw an analogy between the art of sail making and the art of effective internal controls over accounts receivable. The reasons internal control came about and continues to exist will also be examined, with due consideration given to the changing business environment. Topics to be examined include the evolution of internal control over accounts receivable in western society from the year 476 through 2009, a span of 1500 plus years; especially the use of the tally stick in Europe after the fall of the Roman Empire, the publishing of the first known double entry accounting system, and of course digital analytics using computer software. The phenomena of Benford's Law will be explored and explained drawing upon a primary research project done to test Benford's Law. The tally stick as technology was used in Europe for 1400 years; its genesis in Africa as possibly the first tool picked up and used by a hominid makes the stick the greatest influence on the development of European commerce practices. United States commerce practices were based on European commerce with immigrants flowing primarily from Europe, Russia, and England. Human Nature is the unchanging variable in the internal controls evolutionary process.

CH5, 2:30

Gary Dennis

Improv Skills are Serious Business

James M. Hull College of Business

Adviser: Dr. Pamela Jackson

Business majors come out of their degree programs with significant skill sets, but the addition of a few critical skills could make the difference between capable and outstanding. Using a blend of interactive lecture and audience participation, I will demonstrate how learning some basic principles from Improvisational Theater adds value for people involved in virtually any aspect of business. Value is created by improving listening skills, making groups more receptive to learning and doing, improving conflict resolution, and facilitating innovation and creativity.

2:45 Break

CH6, 3:00

Janell Thompson

The National Guard's Role in Border Security

Department of Political Science

Adviser: Dr. Sandra Reinke

The recent advent of international terrorism has revolutionized domestic border security in the United States. In order to police porous borders, the United States National Guard has been utilized. Military involvement necessitates discussion of Posse Comitatus and the legitimacy of domestic military action. The actions of military task forces in the nineties are considered, as well as the recent successes of the National Guard in Operation Jump Start. Finally, alternatives to military action are presented such as international agreements and aid, and the prohibitive cost of long-term military presence at the border is regarded.

CH7, 3:15

Adam Mestres

U.S. Stadium Security: The Good, Bad & Ugly

Department of Political Science

Adviser: Dr. Sandra Reinke

When it comes to domestic security concerns, it appears that stadium security is at the bottom of the list. What security analysts should consider is that the Department of Homeland Security has listed stadiums as part of our national infrastructure. The Center for Spectator Sports Security Management at the University of Southern Mississippi is playing an important role in trying to bring stadium security to the forefront of our domestic security concerns. This research gives a bird's-eye view with regard to the areas of stadium security that are considered most important to stadium managers. While it may be impossible for stadium managers to prevent all security breaches, it is evident that they could be doing much more to secure our stadiums. This paper will not only examine these security shortfalls, but it will also offer recommendations on how to better secure our stadiums through the use of modern technology, training, and education.

CH8, 3:30

Andrew Jenson

America's Escape from Guantanamo Bay

Department of Political Science

Adviser: Dr. Sandra Reinke

This paper seeks to explain the complex administrative difficulties involved with the Guantanamo Bay prisoner detention facilities. Immediately upon his arrival in office, President Barack Obama signed an executive order calling for the closure of the detention facilities at Guantanamo within one calendar year of the date issued; this also includes the relocation, adjudication, and extradition of all detained prisoners. That year is passed, the facility is still open, and al Qaeda's sprawling terrorist networks have presented more problems than are accounted for even under the most recent renditions of the Obama administration's proposed plans for closing Guantanamo. The author seeks to demonstrate how, through organizational momentum and Supreme Court rulings, the closing of Guantanamo was inevitable, and the need for the Obama administration's continued pursuit of alternative actions regarding the relocation of prisoners and the processes by which they are to be tried by America's courts of law.

CH9, 3:45

Ghadeer Albashir

The Historical and Political Development in Jordan

Department of Political Science

Adviser: Dr. Randall D. Miller

This paper introduces The Hashemite Kingdom of Jordan as a part of the Middle East and it discusses the dominant historical, political, and military aspects of contemporary Jordanian society. The paper addresses the historical setting from ancient times to the present that led to the establishment of Modern day Jordan. It presents the structure of the political system of Jordan, which has three branches of power that constitute its government. In addition, it demonstrates the local district governorates and the development of Army Forces in Jordan.