


4-13-2009

2009 - The Fourteenth Annual Symposium of Student Scholars

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14th Annual
Symposium of
Student Scholars



Recognizing Excellence in
Student Scholarship and
Creative Activities

April 13, 2009

Symposium of Student Scholars

Oral Presentation Schedule

Session 1 (Moderator: Dr. Amy Buddie): University Room C

- 6:00: *Cross Cultural Differences in Mothers' Expectations and Involvement with Their Children: A Comparison Study between Japanese Mothers in Japan, Japanese Mothers in the United States and American Mothers in the United States* — Yuiko Ishida (Faculty Sponsor: Dr. Miriam Boeri, Department of Sociology and Criminal Justice)
- 6:15: *Differential Attitudes Toward Juvenile Offenders* — M. E. Schnorf (Faculty Sponsor: Dr. Dorothy Marsil, Department of Psychology)
- 6:30: *Modern Language & Culture After-School Program: The Importance of Foreign Languages in Early Grades Education* — James Frederick (Faculty Sponsor: Dr. Sabine Smith, Department of Foreign Language)
- 6:45: *Adult Sexual Promiscuity and Perceptions of Three Dimensions of Parenting Practices* — Meghan Gondron and Sarah Winograd (Faculty Sponsor: Dr. Christine Ziegler, Department of Psychology)

Session 2 (Moderator: Dr. Carol Chrestensen): University Room D

- 6:00: *Synthesis and Characterization of a New Compound $HgI_2(dmit)_2$* — Scott Burley and Chris Wood (Faculty Sponsor: Dr. Daniel Williams, Department of Chemistry and Biochemistry)
- 6:15: *Pectoral Fin Muscle Development in *Polyodon spathula** — Shannon Grabich and Denise Acuff (Faculty Sponsor: Dr. Marcus C. Davis, Department of Biology and Physics)
- 6:30: *The Structure and Dynamics of $H_7O_3^+$ and $H_9O_4^+$ Hydrated Ions* — Chris Wood (Faculty Sponsors: Dr. Martina Kaledin, Department of Chemistry and Biochemistry)
- 6:45: *Pharmacological perturbation of Sonic Hedgehog dependent muscle development in the paddlefish *Polyodon spathula** — Denise Acuff and Shannon Grabich (Faculty Sponsor: Dr. Marcus C. Davis, Department of Biology and Physics)

Session 3 (Moderator: Dr. Scott Lewis): University Room E

- 6:00: *Politics of Law: A review of the 2009 Israel-Gaza War* — Abdullah Burgeba (Faculty Sponsor: Dr. Maia Hallward, Department of Political Science and International Affairs)
- 6:15: *Making Music Gives Life* — Erica Eckman (Faculty Sponsor: Dr. David Thompson, Department of First-Year Programs)
- 6:30: *Two-Dimensional Continuous Space in a Bioeconomic Harvesting Model* — W. Greg Youree (Faculty Sponsor: Dr. Andrew Whittle, Department of Mathematics and Statistics)
- 6:45: *Synthesis of Monomers for use in Cell-Penetrating Amphiphilic Polymers* — Harshad Patel and Sergey Isarov (Faculty Sponsor: Dr. Gregory Gabriel, Department of Chemistry and Biochemistry)

Session 4 (Moderator: Dr. Nancy Jo Kirk): University Room C

- 7:00: *Reaction of Boron Tribromide with DMIT* — Jamison Jackson (Faculty Sponsor: Dr. Daniel Williams, Department of Chemistry and Biochemistry)
- 7:15: *Long-range backbone electronics in HIV-1 protease substrates* — Jonathan Parker (Faculty Sponsor: Dr. John Haseltine, Department of Chemistry and Biochemistry)
- 7:30: *Creative Exercises for General Chemistry* — Kathryn Freeman (Faculty Sponsors: Dr. Scott Lewis and Dr. Janet Shaw, Department of Chemistry and Biochemistry)
- 7:45: *Implications of oxidative regulation in the p38 pathway* — Carol Schumacher (Faculty Sponsor: Dr. Carol Chrestensen, Department of Chemistry and Biochemistry)
- 8:00: *The Voices of Poets in the Carabao Sacrifice: A Decoupage* – Keith Derrick (Faculty Sponsor: Dr. David King, Department of English)

Special Thanks

Symposium Organizers:

- ❖ Amy Buddie, Faculty Fellow for Advancing Undergraduate Research, Center for Excellence in Teaching and Learning (CETL)
- ❖ Carol Pope, Assistant Director for Disabled Student Support Services
- ❖ Chris Dockery, Assistant Professor of Chemistry and Biochemistry
- ❖ Scott Lewis, Assistant Professor of Chemistry and Biochemistry
- ❖ Bill Hill, Director, CETL
- ❖ Lynn Lamanac, CETL
- ❖ Kaleem Clarkson, CETL

Student Aides:

- ❖ Judy Heitz, Department of Chemistry and Biochemistry
- ❖ Jessica Hobbs, Department of Psychology
- ❖ Sanah Ishaq, Department of Chemistry and Biochemistry
- ❖ Gerhard Kummerow, Department of Chemistry and Biochemistry
- ❖ Quynh Nguyen, Department of Chemistry and Biochemistry
- ❖ Jonathan Parker, Department of Chemistry and Biochemistry

Prizes for posters and oral presentations generously made possible by the Student Affiliates of the American Chemical Society (SAACS)

14th Annual Symposium of Student Scholars

April 13, 2009

Program

5:00pm – 5:10pm	Welcome
5:10pm – 6:00pm	Poster Session
6:00pm – 7:00pm	Concurrent Oral Presentation Sessions
7:00pm – 8:00pm	Concurrent Oral Presentation Sessions

14th Annual Symposium of Student Scholars

Oral Presentation Sessions 6pm-7pm

Session 1

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- 6:45: *Adult Sexual Promiscuity and Perceptions of Three Dimensions of Parenting Practices* — Meghan Gondron and Sarah Winograd (Faculty Sponsor: Dr. Christine Ziegler)

Session 2

- 6:00: *Synthesis and Characterization of a New Compound HgI₂(dmit)₂* — Scott Burley and Chris Wood (Faculty Sponsor: Dr. Daniel Williams)
- 6:15: *Pectoral Fin Muscle Development in *Polyodon spathula** — Shannon Grabich and Denise Acuff (Faculty Sponsor: Dr. Marcus C. Davis)
- 6:30: *The Structure and Dynamics of H₇O₃⁺ and H₉O₄⁺ Hydrated Ions* — Chris Wood (Faculty Sponsors: Dr. Martina Kaledin)
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14th Annual Symposium of Student Scholars

Oral Presentation Sessions 7pm-8pm

Session 4

- 7:00: *Memorial de Tlatelolco por Rosario Castellanos* — Jennie T. Wiggins (Faculty Sponsor: Dr. June K. Laval)
- 7:15: *La explotación y esclavitud indígena relatada por el escritor ecuatoriano Jorge Icaza Coronel* — Marcelo Cedano (Faculty Sponsor: Dr. June K. Laval)
- 7:30: *“Autorretrato” de Rosario Castellanos: poema rebelde y feminista* — Krystal Raines (Faculty Sponsor: Dr. June K. Laval)
- 7:45: *Balada de la sangre de María Elena Cruz Varela: voz de protesta* — Matthew Spires (Faculty Sponsor: Dr. June K. Laval)
- 8:00: *The Voices of Poets in the Carabao Sacrifice: A Decoupage* – Keith Derrick (Faculty Sponsor: Dr. David King)

Session 5

- 7:00: *Reaction of Boron Tribromide with DMIT* — Jamison Jackson (Faculty Sponsor: Dr. Daniel Williams)
- 7:15: *Long-range backbone electronics in HIV-1 protease substrates* — Jonathan Parker (Faculty Sponsor: Dr. John Haseltine)
- 7:30: *Creative Exercises for General Chemistry* — Kathryn Freeman (Faculty Sponsors: Dr. Scott Lewis and Dr. Janet Shaw)
- 7:45: *Implications of oxidative regulation in the p38 pathway* — Carol Schumacher (Faculty Sponsor: Dr. Carol Chrestensen)

14th Annual Symposium of Student Scholars

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Proposed Accounting Rules for Loss Contingencies

Stephanie Autry
Dr. Jane Campbell and Dr. Liza Davis

Department of Accounting
Coles College of Business

This study focuses on the Exposure Draft released by the Financial Accounting Standards Board titled “Disclosure of Certain Loss Contingencies: an amendment of FASB Statements No. 5 and 141 (R).” The proposed Amendment requires additional disclosure for FASB Statement No. 5, “Accounting for Contingencies.” A random sample of ten companies in the Dow 30 was selected. The financial statements of the companies in the sample were analyzed to identify and evaluate the changes that would need to take place if the amendment is passed. The results indicate that the additional disclosure would not make the financial statements more useful for investors. The changes would be too costly to implement, the additional information required could be prejudicial, and the estimates could be meaningless due to overstatement.

The Voices of Poets in the Carabao Sacrifice: A Decoupage

Keith Derrick
Dr. David King

Department of English
College of Humanities and Social Sciences

In this paper I examine the relationship between T.S. Eliot and the film Apocalypse Now!. More to the point however, I delve into the mysteries surrounding the numerous versions and interpretations of the film, and explain how when viewed in the context of Eliot's work, the correct version and interpretation. I do this through a decoupage series examining the each shot and relating it to the poem "The Wasteland". By performing along these lines, the reader will discover revelation about the vague ending of the film.

Cross-cultural Perceptions of Environment and Culture in Chile and the United States

**Tyler J. A. Hengs, Katherine E. Bundy, John N. Stoerner, and Matthew R. Goulding
Dr. Ernesto Pierre Silva and Dr. Nancy Hoalst Pullen**

Department of Foreign Languages
College of Humanities and Social Sciences

A 2008-2009 CETL CARET grant provided the incentive to carry out an international research project that has obtained information through hundreds of written surveys and almost a dozen on-camera interviews. The goal was to assess the influence environment and culture have in the formation of opinions and perspectives of residents of particular locations in Chile and the United States. Based on previous research from the New Environmental Paradigm (NEP), the surveys and interviews were conducted by students who received certification from the KSU Institutional Review Board (IRB). To achieve the objective, the entire research team traveled to a variety of public locations within the Chilean cities of Santiago, La Serena, and Valparaiso/Viña del Mar, as well as the US cities of Atlanta, Savannah, and St. Simons in Georgia. Results demonstrate that participants have similar perceptions on the environment and culture, though their geographical milieus are quite dissimilar. Future research will be conducted in other parts of Latin America for more insight on how environment and culture are perceived by individuals.

Modern Language & Culture After-School Program: The Importance of Foreign Languages in Early Grades Education

James Frederick
Dr. Sabine Smith

Department of Foreign Languages
College of Humanities and Social Sciences

Kennesaw State's Modern Language & Culture After-School Program (MLC-ASP) is designed to foster in children of local elementary & middle schools an understanding of another language and culture and has been in the elementary schools for both the German & the French languages since fall 2005. By exposing these children to the cultures of other countries, both past and present, KSU foreign language students reinforce their own learning. KSU students improve upon their linguistic ability; they develop & implement lesson plans in their respective languages.

Since I have begun working with the MLC-ASP in fall semester 2008, I have developed important tools to grow the program. I did this by developing the website that allows for easy access to information needed by student teachers to teach their classes. Through this website we have a central location to keep and store all electronically generated materials that can be used in all the classes. I established a standard layout for the lesson plans that are used. This allows for the ease in ability for any class leader to go into another class and lead that class if needed.

I will be presenting the new website for this program:

<http://www.kennesaw.edu/community/servicelearning/>

I will also be including in the presentation two different lesson plans as well.

In fall 2008 there were around 12 students from KSU German classes that participated in the MLC-ASP. At the beginning of the spring 2009 semester, there were around 28 students that started to take part in the program. The large increase was a result from an experiment, which was to see if having a fellow student speak to the individual classes rather than just the instructors speaking, would provide for a better response in involvement. The program's merits can best be summed up by a quote of a former participant in the MLC-ASP. Laura Holmes said, "The MLC-ASP has helped me step outside of my comfort zone, and has helped me become a better teacher and a more effective student."

This global dimension of teaching & learning for both college-level students and young children enhances the quality of education, as well as prepares everyone for understanding the global society that we live & learn in today.

Memorial de Tlatelolco por Rosario Castellanos

Jennie T. Wiggins
Dr. June K. Laval

Department of Foreign Languages
College of Humanities and Social Sciences

Rosario Castellanos es una autora multifacética que se dedicó a escribir sobre los derechos humanos de los mexicanos y específicamente sobre la gente indígena de México. Voy a estudiar el poema de Castellanos “Memorial de Tlatelolco”, un poema sobre la masacre estudiantil en la Plaza de Tlatelolco en la ciudad de México, el dos de octubre de 1968. En este poema Castellanos denuncia la injusticia de la masacre durante una manifestación pacífica de más de 300 estudiantes. Estudiaremos el poema como homenaje a los estudiantes inocentes que murieron ese día y una denuncia del gobierno mexicano. Es al mismo tiempo una súplica a todos de no olvidar esta tragedia nacional y universal.

La explotación y esclavitud indígena relatada por el escritor ecuatoriano Jorge Icaza Coronel

Marcelo Cedano
Dr. June K. Laval

Department of Foreign Languages
College of Humanities and Social Sciences

En 1934, el escritor ecuatoriano Jorge Icaza Coronel revolucionó sectores de la sociedad literaria ecuatoriana y mundial con la publicación de su obra *Huasipungo*, un relato sobre los abusos de terratenientes hacia los indígenas en pleno siglo XX. *Huasipungo* trajo una visión más clara de los abusos y miseria que debían soportar los indios de la serranía ecuatoriana en manos de los propietarios de terruños y hacendados, e incluso de los extranjeros que venían al país para explotar las riquezas del mismo.

En pleno siglo XX, los indígenas eran no solamente obligados a trabajar en condiciones precarias sino que eran abusados, torturados y negados de paga. En el Ecuador de hoy en día, la comunidad indígena ha cobrado gran notoriedad e importancia en el ámbito social, cultural, deportivo y político, pero este poder del cual hoy gozan era muy limitado hasta hace unas décadas. Cuando Icaza publica su novela *Huasipungo* en 1934, según cuentan varios historiadores, el impacto social que creó fue tan grande, que cambió la conciencia ciudadana y la manera de pensar de muchas personas, incluyendo grandes figuras de la política y la sociedad ecuatoriana en torno a los indígenas, su cultura y su manera de vida.

“Autorretrato” de Rosario Castellanos: poema rebelde y feminista

Krystal Raines
Dr. June K. Laval

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En el poema, “Autorretrato”, de la colección Poesía no eres tú, Rosario Castellanos plantea el dilema de la mujer moderna mexicana en una sociedad machista. Examinaremos este poema biográfico donde lamenta la escritora que su título de señora sea más importante que sus títulos académicos. Su voz revela en sus versos un análisis íntimo de su ser y defiende su derecho de ser “diferente”

Balada de la sangre de María Elena Cruz Varela: voz de protesta

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En 1996, María Elena Cruz Varela publicó Balada de la sangre, una colección de poemas donde expresa su sufrimiento durante 20 meses en la cárcel por haber protestado el gobierno de Fidel Castro. Con nueve miembros del grupo Criterio Alternativo, escribió un manifiesto que pidió debates nacionales, elecciones directas para la asamblea nacional, la abolición de las restricciones para viajar, reformas y la libertad de todos los prisioneros políticos. Veremos cómo su poesía en Balada de la sangre protesta su situación de prisionera pero al mismo tiempo representa un refugio contra la injusticia humana y política de Cuba bajo Fidel Castro.

Understanding Site Selection Criteria & the Impact of Philanthropic Travel

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In all regions of the world, a new source of international development assistance referred to as Travelers' Philanthropy is evolving. Travelers Philanthropy involves civic-minded travelers and travel businesses giving time, talent, and financial resources in an attempt to have a real and meaningful impact on the destinations that they visit. While philanthropic visits can involve traditional sightseeing tours, safaris, and deluxe accommodations, travelers on these trips also spend time visiting charitable operations including schools and health clinics to see first-hand how financial donations can be put to work. The purpose of this research is to develop an understanding of the selection criteria for chosen international philanthropic travel sites. This research will be an important contribution to the field of geographical inquiry that explores the spatial connections between the developed and developing world. The study involved collecting data from interviews with charitable international aid organizations that organize and promote travelers' philanthropic trips and subjects who have participated in philanthropic trips provided by the selected international charitable aid organizations. The overarching goal of this research is to establish baseline data and to develop a framework for a larger study on philanthropic travel. Since this is a newly developing form of tourism there is almost no formal literature available on this topic, therefore this study will be seminal and contribute much to the knowledge and understanding of travelers' philanthropy and the impact of travelers' philanthropy on international development assistance.

From Stone to Steel: Macroscopic and Microscopic Comparison of Sharp Force Trauma on Bone

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Sharp force trauma to bone is of both forensic and bioarchaeological interest. The intent of this study was to observe and record the signs of trauma associated with an attack to a human arm with weapons that reflect the variety of tools and materials used in modern and historic contexts. Hacking and slashing trauma was experimentally inflicted on lamb leg bones using a hand axe, machete, bronze short sword, and an obsidian knife. Cuts marks on the surface of the bones were analyzed macroscopically, and then microscopically using a handheld digital microscope. The results of this investigation indicate that it is possible to correlate bone trauma characteristics with the design differences of hacking weapons both past and present.

Bipedal Locomotion in Western Lowland Gorillas

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The researcher observed bipedal tendencies in western lowland gorillas of diverse ages. Younger male gorillas have a greater propensity to use this form of locomotion, both practically and in play, than older male gorillas. Three types of observation were employed to obtain evidence of bipedalism, focused on different behavioral aspects of gorilla locomotion. During observation, bipedal movement was utilized by younger gorillas during both play and practical travel from one point to another. However, when they sought affection or acceptance from older males, they reverted to knuckle walking. Quite interestingly, larger Silverbacks only exhibited bipedalism during displays of protective aggression regarding territory and resources, or to stretch. Further evaluation and greater understanding of western lowland gorilla musculature and physiology is stringently recommended. It is posited that the species possesses the capacity for bipedal adaptation. However, it remains largely the province of the young, due to the adaptive dimorphism of mature, dominant males.

An Analysis of Dental Attrition Rates and Caries in a Late Minoan Population from Palaikastro, Crete, Greece

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Dental health is affected by the subsistence patterns of population groups. Attrition patterns and rates of carious lesions from a sample of sixteen individuals from the Late Minoan site of Palaikastro, 1700-1420 BC, were recorded and compared to similar studies of ancient mainland Greeks (3300 BC to 150 AD) and a population from Knossos, Crete (1750-1550 BC). Similarities in the attrition rates and carious lesion rates were found between the populations on Crete more so than with populations from mainland Greece suggesting that the diets in Crete have been relatively steady over time and have differed from the populations of mainland of Greece in the Middle Bronze Age, Mycenaean, and Sub Mycenaean periods. Funding for this research was provided by an award from the Center for Excellence in Teaching and Learning at Kennesaw State University.

Industrial Dental Wear Patterns in an Archaic Male from East Crete, Greece

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Dental wear patterns can provide information about an individual's occupation and environment. When teeth are used for industrial tasks, specific wear patterns emerge on the teeth over time. This paper presents the case study of an adult male from eastern Crete, Greece, who lived in the Archaic period (ca. 600 BC). His teeth had peculiar heavy dental wear on the mandibular and maxillary incisors. The teeth were worn down to create u-shaped grooves on the occlusal surfaces. Similar dental wear patterns have been documented on individuals who habitually pulled fibrous material through their teeth while weaving or spinning. The analysis of the individual's dental wear shows a wear pattern that suggests that he used his teeth as a form of tool, possibly for domestic household procedures. Funding for this research was provided by a CARET award from the Center for Excellence in Teaching and Learning at Kennesaw State University.

Forestry Plantations: The Case of Monterrey Pine in Chile

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Plantations of Monterrey pine have come to dominate much of the landscape in Chile. Some say it has halted deforestation of the natural forests, boosted Chile's economy, provided jobs, and helped the conditions of the local people. Others say quite the opposite; they contend that plantations are destroying natural forests, threatening biodiversity, destroying the lives of the local people, and opening up Chile to the dangers of being reliant on monocrop. In reality, there is some truth to both sides. The planting of forest plantations has given the industry another source of raw material, which has helped to preserve the natural forest. However, there have been areas of natural forest that have been converted to plantations. In some areas it has provided more jobs; however they are only temporary jobs that do not necessarily help a person's status. In some areas it helped with things such as bringing infrastructure to local economies. In other places people have been forced of their land in to shantytowns. Plantations have without a doubt helped Chile's economy, but are they ecologically sustainable?

Bullet Wounds: Is Decomposition a Factor?

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Differences in the impact of a bullet wound at different stages of decomposition may help in determining whether a specimen that is skeletonized was shot antemortem or postmortem. For this research project, three pig heads were shot to determine the effects of decomposition on impact wounds where the bullet enters the skull. Preliminary results show slight differences in the entrance wounds of skulls at different stages of decomposition. This research suggests that analysis of heads shot at different stages of decomposition is important to forensic anthropologists because if a skeleton was found the anthropologist would be able to tell if the bullet wound was the cause of death or if it occurred postmortem.

Homemade Decomposition: Using Household Chemicals to Accelerate Body Decomposition

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A forensic anthropologist assists in identification of remains, discovers evidence of trauma and any other information about a victim's remains such as sex, ancestry, stature, and possibly mode and manner of death. Decomposition of the body affects what information the forensic anthropologist is able to obtain and several factors effect a body's decomposition. The purpose of this study is to examine how five common household chemicals effect body decomposition. The chemicals used were vinegar, Coke, bleach, Drano, and battery acid, with water used as a control. Pork ribs were used due to their similarity to human ribs. Each macerated rib was monitored for the same length of time to determine the chemical's ability to dissolve the flesh on bone. Preliminary results indicate Drano had the greatest effect with bleach having the second greatest.

Soil pH and its Effects on Decomposition

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In this project, I have attempted to observe the affects of soil pH on decomposing flesh. Three slices of pig ribs were buried in soil balanced at three different points on the pH scale. The samples were allowed to decompose for five weeks. I exhumed the remains on weeks one, two, four and five to examine their condition, record a brief description and take a few pictures. Maggot activity and flesh condition were recorded to compare to previous weeks and the soil acidity was taken at each observation to note any fluctuations. Preliminary results suggest that more alkaline soils decay about one week slower than more acidic soils. This indicates that soil pH should be taken into account when estimating time since death.

Developing a Loblolly Pine Chronology in the KSU Arboretum

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Dendrochronology is used in determining the age of trees and in reconstructing past events such as climate change, insect outbreaks, and fire histories. In this research, dendrochronology was used to study the dynamics of a forest that has been fragmented by urbanization. The study was conducted in a 0.25 permanent plot located within the Kennesaw State University Arboretum in Kennesaw, Georgia. Thirty-four loblolly pines (*Pinus taeda*) were cored in September 2008 using an increment borer. Select cores were mounted, sanded, and analyzed under a microscope. Skeleton plot results show that the pines were established in the 1930's and has had significant growth stress occurring in the years 1959, 1978, 1987-1992, and 1999-2000. The results also support the current successional trends found within the plot, i.e. from predominantly pine (*P. taeda*) to oak/hickory (*Quercus/Carya* spp.) and understory beech (*Fagus grandifolia*). Overall, this study aids in understanding the history and future trends of the KSU Arboretum in terms of tree composition and structure, and more generally, how this stand relates to similar urbanized forests in the eastern United States.

Politics of Law: A review of the 2009 Israel-Gaza War

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In light of the recent conflict in the Gaza Strip some observers in the international community, Israel and Palestine have called for an investigation of Israel's military conduct during the conflict. Due to this renewed interest the authors of this paper will be discussing the legal issues at play in what has become the longest military occupation in modern times. In discussing the conflict the authors hope to prove that the law plays a non-neutral role in the conflict. In order to reach this conclusion the paper will begin with a general overview of the legal terrain in Israel and Palestine. After this the authors will specifically focus on the complex and conflicting interpretations of International and Israeli law regarding the legality of Israel's use of white phosphorus and other controversial weapons. Looking at rival claims to legitimacy the authors will embark on their discussion by looking at the arguments put forth in Israeli jurisprudence with regards to defending the permissibility of the state's use of the aforementioned weapon. The authors will then continue with a review of the claims made by individual Palestinians and Israelis, NGOs such as B'Tselem and Amnesty International and various International Non-Governmental Organizations as to why Israel conduct of the war may be illegal.

Adult Sexual Promiscuity and Perceptions of Three Dimensions of Parenting Practices

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Risky sexual behavior has been studied extensively recently (e.g., Dankoski, Payer, & Steinberg, 1996; Markey & Markey, 2007) due in large part to rising rates of STD's. For instance, almost 25 percent of teenagers in the US report having sex with four or more partners by 12th grade. According to the U. S. Centers for Disease Control and Prevention (CDC), an average of 40,000 to 80,000 new cases of HIV are reported each year in the U.S. It is estimated that half of all new infections are among people younger than 25. Further, 25% of those currently infected aren't aware of their status.

Sexual promiscuity, defined here as any sexual behavior in which a man or woman casually have sex with multiple partners (Markey & Markey, 2007), and its relationship to perceptions of parenting practices was examined. Three dimensions of parenting were assessed using the Child's Report of Parental Behaviors Inventory (CRPBI; Schaefer, 1965). Acceptance versus Rejection measured the degree the parent's attitude is perceived by the child as one of general acceptance or rejection. Psychological Autonomy versus Psychological Control measured covert and psychological methods to control the child's behavior and impede individuation, and Firm versus Lax Control assessed the degree to which parents establish boundaries, rules, and regulations and then enforce these established rules.

Participants ($N = 409$) were recruited from a local college ($n = 350$) and a smaller sample from the local community ($n = 59$) in the metro Atlanta area. The sample consisted of 302 women and 97 men. Participants completed the survey using an online survey engine and responded to the CRPBI for both mother and father and to two questions that measured promiscuity "Do you now or in the past, ever had more than one sexual partner during a six-month period?, and, If you answered YES, please indicate how many times this has happened?".

Multiple regression analyses provided an interesting pattern of relationships between high levels of promiscuity and the three dimensions of parenting practices with even more revealing differences in ratings for mother and father. For instance, those indicating that they had more than one partner in the past six months also rated their mothers as engaging in lower psychological control than those with only one partner in the past six months. Results for all dimensions of parenting as well as implications for adults will be presented.

Students Residing on Campus are at a Higher Risk of Sexual Victimization

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Interpersonal violence (IV) victimization on college campuses has been assessed in several studies (Koss, Gidycz, & Wisniewski, 1987; Larimer, Lydum, Anderson, & Turner, 1999); however, to the best of our knowledge, a comparison of campus versus non campus residents has not been addressed. The current study was conducted as a means of investigating incidences of IV on a large southeastern campus as a result of the rapid growth of students and faculty over the last 10 years (*About KSU*, 2007). Results will be used to assist campus administration in developing programs to aid in the education and prevention of IV. Students, faculty, and staff completed an online survey. Approximately 12% ($n = 216$) of student participants ($N = 1,831$) indicated they reside on campus. Analyses were conducted using responses from the Sexual Experiences Questionnaire *DoD-S* (SEQ *DoD-S*; Fitzgerald & Shullman, 1985; Fitzgerald et al., 1988), evaluating the differences between the prevalence of IV recorded by students residing on campus compared to those residing off campus. Results of a 2-sample proportion test revealed that students residing on campus are at a higher risk of sexual assault (11.57%) than non campus residents (6.19%), $z = 2.95$, $p = .003$. Furthermore, there is a greater potential for unwanted sexual attention among campus residents (24.07%) than students residing off campus (13.50%), $z = 4.17$, $p < .001$. Acknowledging the known psychological and physical consequences of sexual victimization (American Medical Association, 1995), results from this study promote the necessity of campus awareness and prevention programs.

Barriers for Reporting Interpersonal Violence

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The purpose of this pilot study was to determine the barriers that would prevent college students at a large Southeastern university from reporting interpersonal violence (IV). In addition, researchers determined which participants experienced IV and to whom they reported this information. Undergraduate psychology students (N = 95, 67 females & 22 males) completed a barriers to reporting IV scale. The scale included 13 female and 14 male barriers. Each participant rated why he/she would not report an IV incident due to each barrier listed on a 5-point Likert-type scale. (Sable, Danis, Mauzy, & Gallagher, 2006). Age, ethnicity, gender, class standing, and campus residency were analyzed using correlations, crosstabs, and ANOVAs. Results indicated that age, gender, and class standing had significant effects on various barriers to reporting IV incidences. Our results will be used to direct future, campus-wide surveys assessing barriers and other IV issues and to tailor educational prevention programs to better suit the Kennesaw State University student population.

Gender and Victim Status as Predictors of Rape Myth Attitudes

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The Burruss Institute at Kennesaw State University collected data across the state of Georgia in order to assess general attitudes towards rape, opinions on primary prevention of sexual assault, and participant's knowledge of available resources provided by the state. A total of 800 participants were randomly selected from telephone directories and were representative of all Georgia counties. Participants were telephoned and surveyed about their attitudes toward rape myths using questions designed by researchers. The survey contained 9 statements on which participants rated their level of agreement using a Likert Scale. Participants were 31.9 % male and 66.2% female. The average age was 52 years. Participants were 69.1 % Caucasian, 23% African American, and 7.9% Asian, Native American, or other. A 2 (gender) x 2 (victim status) ANOVA was conducted for each survey question. Results indicated that males and females differed in their attitudes toward rape on a few of the survey items. Additionally, participants who were victims of sexual assault or who knew someone who had been sexually assaulted differed in their attitudes. Discussion will focus on implications of our data and limitations of the study.

Differential Attitudes Toward Juvenile Offenders

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The juvenile justice system is heavily influenced by the fields of criminal justice and psychology disciplines, although their approaches may differ in content and motive. Justice officials are charged with the task of protecting the public as a whole, while psychologists are charged with the task of meeting individuals' mental health needs. While psychologists and mental health workers who provide services to persons in the juvenile justice system are interested in the needs of the client through the avenues of protection, treatment, and rehabilitation, those in the justice system seem to be more interested in controlling and punishing anti-social behavior. Due to the divergent approaches of these fields, it was hypothesized that students from each major would respond differently to items regarding their attitudes and decision-making in juvenile cases.

In order to test this hypothesis, lower and upper division students were sampled from psychology and criminal justice courses. This categorization allowed comparisons both between and within major fields. Participants were asked to read a brief trial summary about a 13-year old boy who was found guilty of armed robbery; in one condition the gun was real, and in the other it was a replica. After reading the summary, participants responded to items related to sentencing, perceptions of the juvenile justice system and crime rates, legal attitudes, and basic demographic information.

Results supported the hypothesis in addition to providing stark contrasts between policy decisions and public attitudes. A chi-square test of independence revealed a trend in the relationship between major and the type of sentencing option chosen for the juvenile, $\chi^2 = 8.47$, $p = .08$. Further analysis of the two proportions revealed that criminal justice majors were more likely to choose punishment-oriented sentences than psychology majors ($z = 1.68$, one-tailed).

Nearly 90% of participants chose to sentence the offender in juvenile court rather than sending him to adult court. Participants who chose to send the offender to adult court were significantly more likely to choose punishment-oriented sentences, $\chi^2 = 17.68$, $p < .001$. Participants that read the trial summary in the replica weapon condition were significantly more likely to report that they would change their responses had the weapon been real, $\chi^2 = 16.84$, $p < .001$. Significant differences were also found on items related to legal attitudes and authoritarianism. These differences existed between both the specific distinctions of students (lower- and upper-level students) as well as between the different majors.

These results provide evidence that those trained in criminal justice are more likely to respond to serious juvenile offenders with punitive action, while those in psychology are more rehabilitation focused. Clear contrasts between existing policy and reported attitudes were found. Although 90% of the sample chose to sentence the offender in the juvenile justice system, by Georgia law, the juvenile would have been automatically transferred and sentenced in adult court. In addition, Georgia law does not distinguish between the use of a real versus replica/toy weapon, although it did matter to participants. This study provides evidence that students trained in criminal justice compared with those in psychology differ in their attitudes toward juvenile offenders, legal authoritarianism, and legal practices.

Faculty Perceptions of Undergraduate Research

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For the present study, we were interested in examining faculty members' perceptions of undergraduate research. Participants included 71 faculty members from Kennesaw State University. They were recruited to participate in an online survey where they answered questions about their experiences of and satisfaction with supervising undergraduate students on research projects during the past year. Approximately 56% of the participants reported that they had worked with students on research projects in the last year. The faculty members reported that most often students approached them and asked to be involved with existing research. The most common product of student research was a poster presentation at a conference. The biggest benefit to the faculty members was that they enjoyed teaching students about research. The biggest barrier to mentoring student research projects was that it was too time consuming. When asked what would increase their participation in undergraduate research, faculty members indicated most often that they would like to receive teaching credit. Based on the results of the survey, faculty members enjoy working with students on research projects. However, it is so time consuming that they need additional benefits so that they will be able to complete more projects with students in the future.

Perceptions of Consenting to Unwanted Sex

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In the present study, we examined perceptions of consenting to unwanted sex. Participants ($n = 154$) read a scenario in which either a male or female character consented to unwanted sex for one of four reasons. Participants then answered 10 Likert scale questions about the scenario. We hypothesized that consenting to unwanted sex would be perceived to be more common and normal for women than for men. However, the results indicated that the reasons for consenting to unwanted sex were more influential than the gender of the character. These results are discussed in terms of the degree of correspondence between people's experiences versus perceptions of consenting to unwanted sex.

Agreeing to Unwanted Sex

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The purpose of our research was to examine the reasons why people agree to sex when they would prefer not to. Approximately 500 psychology students completed an online, anonymous survey; almost 75% of the participants were female, more than 80% were Caucasian, and 95% were heterosexual. Participants first were asked a series of “yes/no” questions regarding reasons for agreeing to unwanted sex. If they had any experiences of consenting to unwanted sex, they then were asked to describe the events leading up to the most recent sexual encounter as well as their reactions to the incident. Almost 75% of the participants admitted to consenting to unwanted sex, most of whom were female; the most common reasons for this consent were satisfying their partners’ needs, preventing feelings of rejection, a sense of obligation/duty, and fear of deterioration of the relationship. Results indicated that women who agreed to the unwanted sex felt that it strengthened the relationship if they had previously had sex with this person. Also, women indicated more feelings of regret if they had not previously had sex with this person. Future research is needed due to the frequency with which consensual unwanted sex occurs.

College Students' Attitudes Toward Religion, Cognitive Complexity, and Attitudes Toward Gay Men and Lesbians

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A considerable amount of research has been conducted on the relationship between religiosity and attitudes toward gay men and lesbians. Such research suggests that people who are religious tend to be more prejudiced than people who are not religious (e.g., Allport & Ross, 1967). However, there is little research on how attitudes toward religion in general (e.g., “religion creates judgmental people”) relate to attitudes toward gay men and lesbians. Furthermore, there is no research on the extent to which cognitive complexity may mediate this relationship. Therefore, the present study was conducted to examine these issues. Participants ($n = 180$) completed 3 scales: attitudes toward religion, attitudes toward gay men and lesbians, and cognitive complexity. As expected, attitudes toward religion correlated negatively with attitudes toward gay men and lesbians, and cognitive complexity correlated positively with attitudes toward gay men and lesbians. Contrary to our hypothesis, cognitive complexity did not mediate the relationship between attitudes toward gay men and lesbians and attitudes toward religion. These results add to the knowledge surrounding religion and prejudice toward gay men and lesbians.

Perceptions of Sexual Aggression: The Influence of Perpetrator Intoxication and Sexual Aggression History of Participant

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This study was designed to examine sexually aggressive men's perceptions of sexual coercion. Men ($n = 180$) with and without a history of sexual aggression were randomly assigned to read a vignette about a man drinking alcohol either heavily or lightly. The results showed that before sexual coercion occurred, men with and without a history of sexual aggression did not differ in their perceptions of the male character or the evening outcome. However, as the scenario became progressively more coercive, men with a history of sexual aggression rated the male character more positively and imagined a more positive evening outcome compared to their non-sexually aggressive counterparts. These results highlight the importance of assessing attitudes at multiple points in a vignette.

How Much Do Academics Matter in College Choice?

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Dr. Darina Lepadatu and Dr. Judy Riley

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The purpose of my project is to find out what are the most important criteria that students take into consideration when they select a college/ university. 234 college students at 8 different 4 year public and private universities in the state of Georgia were surveyed to measure their values in respect to the role that a college or university would play in their education, and their perceptions of the social and academic reputation of their school. The results show that the most important factor for most students is in fact academically related. Academic reputation of a school or a specific academic program were the two most important criteria, followed closely by the campus environment and cost of living or financial aid. However, while a large majority of respondents stated that social life is an important aspect of a college education, very few stated that the social life at their school had a significant influence on their decision to attend that school.

Alcohol and Drug Use at Work: When Employee Testing is Necessary?

Bardie Hooks

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The purpose of this project is to analyze Human Resources managers' perception of drug and alcohol use and employment testing policies in the workplace. This qualitative research study is based on 10 in-depth interviews with human resource professionals within the construction, home improvement and restaurant business. The study revealed that alcohol and drug use is a major problem in these industries, mostly in the dining industry where there are not strict safety regulations as in the construction industry.

Cross Cultural Differences in Mothers' Expectations and Involvement with Their Children: A Comparison Study between Japanese Mothers in Japan, Japanese Mothers in the United States and American Mothers in the United States

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The broad goal of this research is to explore cross cultural differences between U.S. and Japanese mothers involvement in and expectations for their children, specifically educational expectations. The research will compare Japanese mothers in Japan, Japanese mothers in the U.S., and American mothers in U.S. to explore differences and look for patterns related to cultural background. The study uses both quantitative and qualitative research methods. The quantitative data is collected through a self-administered survey, and the qualitative data is collected through audio-recorded in-depth interview or through email if preferred by the respondent. The sample includes 13 Japanese mothers in Japan, 9 Japanese mothers in the U.S, 7 American mothers in the U.S with children age from 13 to 16.

Predicting wetland plant community species composition using GIS and plant dispersal ability

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Insufficient baseline data exists to guide wetland creation projects in the Southeastern United States. To investigate attributes of local wetlands we studied two areas, an established wetland at the edge of Lake Acworth, and the Tanyard Creek embayment of Lake Allatoona, which is a potential site for creation of a new wetland (currently the water level rises and lowers with Lake Allatoona). We began our research by examining water depth as an environmental gradient and a controlling factor in plant species distribution. At the established site, we measured water depth at four corners and the center of randomly located quadrats, and counted the number of individuals of each species within the quadrats. We analyzed plant species composition through field data collection and contour maps for both sites, and compiled a comprehensive plant species list for each site. We obtained seed dispersal ability of the species seen by using the USDA Plants website (plants.usda.gov). Using water depth and dispersal ability of vegetation we made predictions as to future wetland plant growth at the Tanyard Creek site, once the hydrology is altered to create wetland conditions. Some other factors that may influence growth in wetland areas and that were taken into account include surrounding land use and currently established herbaceous species. The surrounding land use was mapped using GIS. The hypothesis that water depth and plant species distribution would show a correlation was unable to be tested. Statistically there was not enough data for most species even though there were many quadrats and water depth measurements taken. The prediction that we would find a prevalence of species that have a rapid seed spread rate at the Lake Acworth site was not validated by our data. From the data collected, we can speculate that since Lake Acworth is an existing wetland, establishment of plants does not rely on rapid seed dispersal. We did however manage to collect a good amount of data for future use in creating a wetland at Tanyard Creek should Kennesaw State University finally acquire this piece of land. There was also enough data to make a fairly good prediction of what would colonize the area once the culvert at Tanyard Creek is adjusted to allow impoundment of water.

Searching for Cis-regulatory Elements Involved in 9p- Syndrome by Identification of Highly Conserved Non-coding Sequences on Human Chromosome 9

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The genetic disorder known as 9p deletion syndrome is caused by a heterozygous deletion of the short arm of chromosome 9 (9p-). The clinical phenotype includes trigonocephaly, severe retardation, and dysmorphic facial features. The deletion of cerberus 1 (*CER1*) gene located at 14.7 Mb of 9p has been suggested as the cause of trigonocephaly. However, Hauge et al. reported recently that 9 patients, whose phenotype is consistent with the 9p deletion syndrome, possess smaller than 12.4 Mb terminal deletions. Therefore, the *CER1* gene is intact in these patients. It raises the possibility that cis-regulatory elements for *CER1* gene could be located in the first 12.4 Mb of 9p. An effective way of identifying potential cis-regulatory elements is to search for highly conserved non-coding sequences (CNSs) across species. In this study we systematically searched for CNSs between 10 and 12.4 Mb of 9p in 500 bp increments using the UCSC Genome Browser. All known genes and expressed sequences were excluded prior to the search. To date, we have identified 268 CNSs between human and mouse and 15 sequences between human and zebrafish. On an average, we found 11 sequences conserved between human and mouse in every 100,000 bp. The most CNSs-rich region is located between 10.6 and 10.7 Mb of 9p (100,000 bp), it contains 32 sequences. The CNSs-poorest region is located between 10 and 10.6 Mb of 9p (600,000 bp), containing zero sequences. Knowledge of these CNSs will be helpful in identifying regulatory elements of candidate genes for 9p- syndrome.

Pharmacological perturbation of Sonic Hedgehog dependent muscle development in the paddlefish *Polyodon spathula*

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Previous investigations of the role that the gene sonic hedgehog (shh) and an organizer region known as the Zone of Polarizing Activity (ZPA) play in determining muscle development in the paired appendages (fins and limbs) have focused on teleost (zebrafish) and tetrapod (mouse, chick) model systems. However, few studies have focused on the role of shh in more basal vertebrates. The North American paddlefish, *Polyodon spathula* is an informative research subject due to its phylogenetically basal position relative to tetrapods and teleosts.

The method used to explore shh gene function in fin muscle development was pharmacological perturbation of normal gene function. Developing paddlefish embryos were incubated in Retinoic Acid (RA), a signaling molecule known to upregulate (increase) the expression of shh in other systems. Upregulation of shh has the effect of inserting an ectopic ZPA along the anterior margin of the fin bud, resulting in partial duplication of the appendage anteroposterior axis. Our results demonstrate that RA perturbation of shh effects paddlefish fins in a manner similar to that reported for teleosts and tetrapods. This suggests that vertebrates exhibit an evolutionarily conserved musculoskeletal developmental program that may date to the origin of vertebrate appendages.

Pectoral Fin Muscle Development in *Polyodon spathula*

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Much of what we know about muscle development and anatomy in vertebrate paired appendages (fins and limbs) comes from the study of a few model systems, namely zebrafish (a teleost fish) and a few tetrapods (i.e., mouse, chicken, frog). What is lacking is a comprehensive investigation of the patterns of muscle development in more phylogenetically basal (primitive) vertebrates. Such knowledge would provide insights into the evolution of appendage musculature in the more derived taxa so commonly used as model systems in biomedical research and could aid in understanding the unique differences observed in each. The North American paddlefish, *Polyodon spathula*, is a freshwater basal vertebrate with a paired fin skeleton exhibiting developmental patterns considered intermediate between that of tetrapods and teleosts. However, the anatomy of the paired fin musculature has not been studied for this taxa and therefore the purpose of this study is to undergo an investigative evaluation of embryonic and larval muscular development using immunohistochemical staining techniques. In particular, embryos immunostained for myosin (a key component of muscle) reveal patterns of fiber type diversity as well as patterns of cleavage of embryonic muscles during development. These results are documented and placed in the proper developmental and phylogenetic context with respect to model systems taxa.

Molecular Characterization of *Aspergillus parasiticus* in Georgia peanuts

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Contamination of raw agricultural products, food and feeds by toxigenic mould is well-documented. *Aspergillus* species are known to produce aflatoxin in peanuts under favorable environmental conditions during harvest, transportation and storage. Aflatoxin is a very potent carcinogen produced by different species of *Aspergillus*. In certain years significant contamination of peanuts with aflatoxin occurs, which results in a large diversion of peanuts from the edible supply and threatens the economic viability of the entire U.S. peanut industry. The aim of this study was to use polymerase chain reaction (PCR) to selectively distinguish non-toxin from toxin producing form of *A. parasiticus* in contaminated peanuts from commercial outlets in Georgia. Ribosomal DNA (rDNA) was amplified using PCR with universal primers, internal transcribed spacer (ITS) 1 and (ITS) 4 for non-producing form. While Nor-1 & Nor-2, and Ver-1 & Ver-2 were used to amplify toxin producing form (Shapira et al., 1996 & Rashid et al., 2008). PCR amplification of all samples tested with ITS primers ranged from 550-600 bp while Nor primers amplified at 400 bp. Ver primers did not show any amplification for all samples tested. Therefore, we conclude that the edible peanuts samples tested in our investigation are contaminated by both toxin and non-toxin strains of *A. parasiticus*. It appears that these peanuts might have been poorly stored at the commercial outlets. It is also known that fluctuation in temperature and moisture content promote growth and toxin production by *Aspergillus* spp. These peanuts could pose a public health hazards since aflatoxin is a potential carcinogen. Our further study will focus on testing more samples from other selling points.

Molecular Relatedness in *Aspergillus flavus* in peanuts from Texas, Florida, and Georgia

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Aspergillus flavus is common fungi found in peanut among many other crops that produces carcinogen aflatoxin. Peanut and other crops are vulnerable to contamination especially in stressful conditions such as high humidity and drought. Aflatoxin produces carcinoma, acute necrosis and cirrhosis in a number of animal species and in humans, an exposure to aflatoxin can increase the risk of developing cancer. Detection of molecular relatedness in *A. flavus* is critical in exploring new biological methods to prevent aflatoxin production in peanut and other crops. The goal of this research project was to characterize *A. flavus* strains from peanuts in Georgia, Texas, and Florida and establish molecular relatedness using polymerase chain reaction (PCR) and DNA sequencing methods. The growth of *A. flavus* was done by incubating peanuts on Potato Dextrose Agar (PDA) for 7 days at room temperature and identification of *A. flavus* colonies was done based on colony characterization and morphology. Sub-culture of colonies was done to obtain pure cultures and PCR amplification of DNA was done using internal transcribed spacer (ITS) primers 1 and 2. ITS primers revealed common banding pattern of 550-600 bp in comparing different geographical location and establishing minimal genetic variation. BLAST search of sequencing results of ITS primers confirms that the species isolated was *A. flavus* using the ABI PRISM 310 Genetic Analyzer to map the intervening ITS 1 - 5.8S - ITS 2 regions of *A. flavus*.

Human GAPDH Gene: Cloning and Real-time Quantitative PCR

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Chromosome 9p deletion syndrome is clinically characterized by mental retardation, dysmorphic facial features, including trigonocephaly, a long philtrum, and upward-slanting palpebral fissures. 9p deletion syndrome is caused by a distal deletion of the short arm of a single chromosome 9 (9p) with a breakpoint between the 9p21 and 9p terminus (Christ, *et al.*, 1999). It has been proposed that the deletion of one copy of the *CER1* gene may be responsible for trigonocephaly exhibited in patients. However, Hauge *et al.* (2008) described a group of patients who have 2 copies of *CER1* gene but show trigonocephaly. Our long term goal is to examine the gene expression patterns in patients with the 9p deletion syndrome using real-time PCR (polymerase chain reaction). Real-time PCR is a very sensitive method for examining the expression pattern as it can quantify the copy number changes of a tissue specific gene, for example *CER1* gene, and a house keeping gene per amplification cycle. Specifically, this study focused on cloning of the housekeeping gene *GAPDH* (glyceraldehyde-3-phosphate dehydrogenase) and using *GAPDH* as a reference gene in real-time PCR. A partial *GAPDH* gene was cloned from a human heart cDNA library using gene specific primers, and the amplified gene product was inserted into the pGEM-T Easy vector. The recombinant colonies were selected from ampicillin and X-gal plates, and the DNA was purified with the QIA Quick columns. The size of the partial *GAPDH* was confirmed to be ~450 base pairs (bp) using gel electrophoresis and a 100-bp ladder. Real-time PCR was performed using a fluorescent dye SYBR Green I and primers specific for *GAPDH*. Serial dilutions of the partial *GAPDH* gene were used as templates to establish the optimal amplification conditions and the C_T value, which is defined as the cycle number at threshold. The C_T value for *GAPDH* is 17 and the amplification efficiency is 1.85, suggesting that the optimal amplification conditions have been achieved.

The Structure and Dynamics of H_7O_3^+ and H_9O_4^+ Hydrated Ions

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The theoretical protonated water clusters H_7O_3^+ and H_9O_4^+ were examined computationally to determine the frequency at which the proton transfer occurs. Several methods and basis sets were compared to determine the most efficient computational approach. B3LYP was chosen, and it was determined that the proton transfer happens around 2400cm^{-1} .

Synthesis and Characterization of a New Compound $\text{HgI}_2(\text{dmit})_2$

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A basic research project on the synthesis and characterization of a new compound, $\text{HgI}_2(\text{dmit})_2$ (dmit = 1,3-dimethyl-2(3H)-imidazolethione), will be presented. A similar compound, $\text{HgCl}_2(\text{dmit})_2$, has been made previously. Characterization of this product by Infrared and Raman spectroscopy, Nuclear Magnetic Resonance (NMR) and x-ray crystallography will be presented.

Reaction of Boron Tribromide with DMIT

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Boron tribromide is a toxic compound currently used in many fields for various applications. It finds use in pharmaceuticals, in polymerization catalysis, dealkylation of ether compounds, and semiconductor doping. It is very reactive, especially with water. In an effort to reduce the toxicity and expand the range of application, boron tribromide was combined with a ligand to make an inorganic complex. The results of the reaction of boron tribromide and 1, 3-dimethylimidazole-2-thione (DMIT) will be presented. This reaction had never been performed before this analysis. The characterization by multiple techniques including infrared spectroscopy (FT-IR) and nuclear magnetic resonance (NMR) and possible applications of the product of this reaction will also be presented.

Long-range backbone electronics in HIV-1 protease substrates

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A proposed mechanism has been reported stating the difference between protease and non-protease catalysis of amide bonds, involving long-range electronics within the backbone of substrate oligopeptides. The rate of cleavage of amide bonds within proteases has been reported much higher than non-protease amide bond cleavage under the same neutral conditions. The separation of amide bond charges in neighboring residues allows for the proposed transition structure that oligopeptides undergo during cleavage. Enzymatic optimization of this separation is proposed to allow for faster rates of catalysis within proteases. To hinder the rate of catalysis and obtain supporting data, tetrapeptide mimics for HIV-1 protease are being synthesized that lack the primary neighboring peptide bonds from the cleaved peptide bond. Alkene bonds have replaced the peptide bonds in order to observe the rate of catalysis of the tetrapeptide mimic. The charge separation state of a carbon-carbon alkene linkage should have relatively less stability than the charge separation state of the amide bond linkage, requiring a higher relative activation energy barrier and a slower rate of catalysis.

Creative Exercises for General Chemistry

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Traditional assessments, such as a multiple choice test, measures how well and how much a student understands about specific concepts covered on the test. We wanted to find an assessment type that would allow students to show their total knowledge acquired throughout a course instead of just specific topics of the course.

This form of assessment is called a creative exercise which is an open-ended question that allows the students to draw on all the knowledge they can from their chemistry courses. This assessment encourages students to connect different topics in a chemistry course that might not have been connected otherwise. It also allows students the opportunity to show instructors how much they know of the topics covered in the chemistry course so far.

The creative exercises (CE) were given to two chemistry classes taught by the same instructor. All students that participated in the study were asked to fill out an informed consent form regarding the study. Nine total CEs were given, five as homework questions where students could utilize their book and other resources and four were given as in-class test questions with no outside resources. In a CE students are given a statement, such as a chemical reaction, and asked to write as many correct facts that are related to the statement. The questions were then graded by three separate graders with no interaction during the grading process to make sure the grading process was independent.

These questions had a moderate correlation with the ACS test which means that these questions likely measure chemistry knowledge similar to the ACS test. Also these questions had a high correlation among the three graders which showed that they could be graded consistently by different graders, even given the open-ended nature of the questions. Creative exercises seem to hold promise in testing students on their chemistry knowledge, and can be used with traditional assessments to test a student's knowledge of chemistry in specific subjects as well as how well the students connect and communicate their knowledge developed throughout a course.

Implications of oxidative regulation in the p38 pathway

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Regulation by glutathionylation is recently being recognized as a reversible mechanism that can impact cellular proteins under conditions of oxidative stress. This process may also allow the activation or inactivation of proteins in cellular signaling pathways that respond to oxidative stressors, such as the p38 stress/cytokine activated kinase cascade. Baby hamster kidney cells were exposed to various stressors to determine conditions that activate the kinase pathway and create global protein-glutathionylation in the cell. Sodium arsenite treatment activated the kinase pathway, as did hydrogen peroxide treatment but neither induced protein-glutathionylation. Treatment with diamide, a compound that selectively induces GSSG and protein-SSG formation in cells, has time dependent effects on the p38 pathway that impact sodium arsenite mediated activation of the pathway. Further study is underway to look directly at individual kinases within the p38 stress pathway to determine if they are regulated by glutathionylation.

Synthesis of Monomers for use in Cell-Penetrating Amphiphilic Polymers

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The Gabriel group is interested in ways to control the amphiphilicity, in other words the hydrophobic/hydrophilic balance, in biologically useful polymers. One goal of the group is to design a series of cell-penetrating polymers for possible drug delivery or gene therapy applications. This talk describes the synthesis of monomers for our initial studies. A Diels-Alder reaction of maleimide and furan was carried out under reflux to form the exo-oxanorbornene adduct preferentially over the endo (92:8 exo:endo). Reaction conditions to favor the endo adduct are being explored as well. Further reactions were used to attach to the oxanorbornenes a guanidinium group which is known to allow cell-membrane permeability due to its capability to alter its hydrophobic/hydrophilic nature. Ring-opening metathesis polymerization (ROMP) using Grubbs catalyst at different conditions will be performed between the oxanorbornenes and cis-cyclooctene to afford a series of guanidinium containing polymers. The progress of the polymerizations will be monitored by nuclear magnetic resonance (NMR) and gel permeation chromatography (GPC) will be used to determine molecular weight and polydispersity. Future studies will attempt to correlate biological activities with different structures, molecular weights, and polymer compositions.

Rapid, Non-Invasive Method for the Detection of the Date Rape Drug Rohypnol using a Gas Chromatograph-Flame Ionization Detector

**Krystle Roberts and Abigail Santos
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Flunitrazepam (a.k.a. Rohypnol or Roofies) was first developed and prescribed to patients suffering from insomnia. It was first manufactured as round white tablets; the primary use was as a strong sedative. A more sinister use of Rohypnol, however, is as a date rape drug. This drug's effects also include disinhibition, loss of impulse control, confusion, and anterograde amnesia. The pill is usually dissolved into a colored alcoholic beverage, where it can be undetectable by the victim. As a countermeasure, the drug company, Roche, reformulated this product to include a color indicator; if the pill is dissolved into most alcoholic drinks, it will turn the drink into a different color, or produce a visible reaction. Even with the precautionary measures taken by the manufacturers, Rohypnol was still categorized as an illegal substance in the United States. It has then become important to develop a rapid, non-invasive method to detect Rohypnol in biological matrices. The purpose of the experiment is to determine if Rohypnol could be accurately detected using a Gas Chromatograph-Flame Ionization Detector (GC-FID).

Commercial Explosives Analysis by Laser Induced Breakdown Spectroscopy (LIBS)

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Explosive components and reaction residue analysis has been an area of great interest to the scientific community for many years; especially in the wake of recent events around the world. The traditional method for analytical analysis had been the use of Scanning Electron Microscopy coupled with Energy Dispersive X-ray Spectroscopy (SEM-EDXS). This method has been the workhorse within this arena because of its ability to show incredibly detailed images and produce elemental data with well respected precision. However, the instrumentation is very costly and its use is equally expensive and time consuming. Many additional factors have lead to the necessity for more cost effective methods of analysis while making every effort to maintain precision and accuracy in instrumental design. Laser Induced Breakdown Spectroscopy (LIBS) is a more recent technology that can provide elemental and quantitative data with significant reduction in operating cost. Additionally, this instrumentation is much smaller in size and easier to operate allowing the analyst to quickly examine multiple samples without downtime. It is proposed that LIBS could be utilized as a replacement for traditional methods using SEM-EDXS, though, it is not assumed to be a completely lateral replacement. The premise of this research was to utilize LIBS as a first choice method for bulk analysis or explosives to determine if further analysis is cost effective. Additionally, the effectiveness of LIBS technology may be compared to SEM-EDXS in its ability to accurately determine qualitative and quantitative elemental analysis of both reacted and unreacted explosives samples.

Evaluation of forensic instrumentation for the identification of arson accelerants

**Jamilah Hankins, Andy Levitz, and Carol Schumacher
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The most common cause of fires in the United States is arson. This experiment tests the effectiveness of three different methods used to identify accelerants that may be present in arson debris. The methods tested were headspace sampling using gas chromatography/mass spectrometry (GC/MS), solid phase micro-extraction using GC/MS, and second derivative ultraviolet spectrometry based on solvent extraction. A library of known samples was constructed using accelerant samples including candle oil, nail polish remover, mineral spirits, gasoline, and ethanol. Unknown samples were obtained from charred woodchips, analyzed by the above methods, and compared to each other and the library samples for identification.

Grease is the word!

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With the many different food related illnesses in recent years, the causes of the illnesses are of utmost importance to consumers. In the most recent peanut butter scare, the plant where the product was made had extremely unsanitary conditions. In such processing plants, there are many different types of machinery. Since each of these machines have moving parts, greases are often applied to prevent friction. These greases typically have thickening agents, fatty-acid soaps, added in order to give them a longer lifespan. There are many different types of grease but food-grade greases are of interest in this experiment since they are made specifically for food related machines, so that they are safer than non-food-grade greases used elsewhere like in an automobile. This experiment attempts to analyze different types of grease to see what might happen if a non-food grade grease were used in a food processing plant.

Extraction of Major Compounds in Arabica Beans and Identification by GC/MS

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Today, coffee consumption among college students has increased dramatically, and a recent survey shows that coffee is voted to be the most popular beverage in America. Researchers have shown interest in the study of the chemical composition of coffee. These studies reveal the diverse class of compounds beyond just caffeine. In this research, extracts from Arabica beans were analyzed under different pH conditions and solvents. Extracts were obtained with liquid-liquid, solid-phase, and solid-phase microextraction. The concentrated extracts were then reconstituted in ether and analyzed with GC/MS. Chromatograms revealed two major peaks that were identified as caffeine and butylated hydroxytoluene (BHT). It was found that their extraction was pH-dependent, with BHT favoring lower pH and caffeine favoring higher pH. A compromise pH of 5 was found suitable for both compounds. SPME revealed 1-(3-methoxyphenyl) ethanone as a minor peak. This compound is known to add aroma to coffee drinks.

A phenotype in search of an explanation: A kinetic analysis of Salmonella FliK-FlhBc binding

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The bacterial flagellum is a massive assembly of over 20,000 individual proteins, most of which must be exported from the cell and assembled at a distant point. It consists of a motor/basal body, a flexible hook and a filament, which all function as a propeller. Flagellar assembly is a complex process involving substantial regulation. Among the most tightly regulated events is a substrate specificity switch that occurs on hook completion. At completion of the hook, filament proteins begin to be exported. Hooks are an almost uniform 55 nm in length, but how the switch occurs is unknown. Based on substantial genetic evidence, proteins FliK and FlhB are known to be involved. Two point mutations, resulting in N269A and P270A amino acid changes, result in polyhook and polyhook-filament phenotypes, respectively. All FlhB variants and FliK were expressed, purified and screened for binding. Interestingly, despite radically different phenotypes, all FlhBs exhibited virtually identical kinetic profiles. Binding best fit a two-on, two-off state model. Implications for hook length control theories are discussed.

Development of a real time optical biosensor assay for B-lactam contamination in waste and drinking water

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Antibiotic contamination of drinking water and sewage is a matter of some public health concern. Traditionally, laborious immunoassays such as modified ELISAs are used to detect and measure antibiotic contamination. Using our biolayer interferometry (BLI) biosensor, we have developed a kinetic competition binding assay capable of detecting < 1 ppm of amoxicillin in various environmental samples. Immobilized conjugated amoxicillin was used as ligand to screen for binding against an analyte solution of anti-amoxicillin antibody equilibrated with amoxicillin-containing water samples. Association experiments yielded complex binding that best fit a two-state model. Observed rate constants correlated highly to amoxicillin concentration. Our assay is sensitive, cost-effective, and fast.

Figures of Merit for the Analysis of Analgesic Compounds by HPLC

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High Performance Liquid Chromatography (HPLC) coupled to a UV-VIS detector was used to analyze acetaminophen, caffeine, and acetylsalicylic acid, which are some of the common active ingredients in commercially available pain relievers. Standard solutions of these substances, in addition to salicylic acid, were prepared and later combined in order to create a series of calibration solutions. The figures of merit such as the detection limit and linearity were evaluated. Calibration curves were then used to find concentrations of pain reliever components in synthesized and store-bought samples.

A New Polycyclic Aromatic Imidazol-2-Thione and its Metal Complexes

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Imidazol-2-thiones show a rich coordination chemistry in which they act as σ -donors for many transition and main-group elements. Herein, we report the synthesis and characterization of a new phenanthrene-fused imidazole-2-thione ligand. This new phenanthrene-fused imidazole-2-thione not only provides entry into imidazol thione complexes bearing a phenanthrene moiety, but also offers an opportunity for elaboration of the structure into a new class of phenanthrene-fused imidazol-2-ylidenes complexes. Details on the chemistry of this thione with respect to its ability to support main group and transition elements will be provided.

New Transition-Metal Complexes of 1-Methyl-3-Propyl Imidazol-2-ylidene: Synthesis and Characterization

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Two new N-heterocyclic carbene derived metal complexes were synthesized and characterized by ^1H NMR and ^{13}C NMR. The precursor imidazolium salt was prepared from N-methyl imidazole and propyl chloride. This salt, in addition to being a good carbene precursor, can also be used as an ionic liquid. Deprotonation of the imidazolium salt with Ag_2O produced the air-stable silver carbene in high yields. A new palladium carbene complex was obtained through a transmetallation reaction starting from the silver complex and $[\text{Pd}(\text{COD})\text{Cl}]_2$. This complex has the potential to act as homogeneous catalyst in different carbon-carbon coupling reactions.

Development of 1-isopropyl-3-methyl- benzimidazole ligand for palladium complex

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A new benzimidazolium salt, 1-isopropyl-3-methyl- benzimidazolium iodide, was prepared by alkylation of 1-methyl benzimidazole with isopropyl iodide. After anion exchange, the benzimidazolium salt was treated with silver (I) oxide to form the corresponding carbene-silver complex. This silver complex was used as a carbene transfer agent in the synthesis of the target palladium complex. The identity of the new metal complexes was confirmed by spectroscopic methods.

1-Hexyl-6-Methylimidazol-2-ylidene: Synthesis and Coordination Chemistry

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Carbenes are neutral molecules that have a divalent carbon; they have been used as ligands in catalytic processes. The target of this project was the synthesis of a new palladium complex that incorporates 1-hexyl-6-methylimidazol-2-ylidene as a ligand. The synthesis was achieved starting from 1-methylimidazole, which was reacted with 1-chlorohexane via an alkylation reaction to form 1-hexyl-3-methylimidazolium chloride. This product was treated with silver oxide to form a *bis*(carbene) silver complex, which was in turn treated with a palladium source to form the target palladium complex. The properties of this new palladium complex were investigated.

The synthesis and characterization of a new 1- methyl-3-isopropyl imidazol-2-ylidene derived metal complexes

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A novel complex of palladium with 1-methyl-3-isopropylimidazol-2-ylidene was generated using a transmetalation procedure. The stable silver complex of the 1-methyl-3-isopropylimidazol-2-ylidene was obtained from the corresponding imidazolium salt using silver oxide as base and metal source. 1-methyl-3-isopropylimidazolium bromide was generated by alkylation of 1-methyl imidazole with 2-bromopropane. The structures of the new metal complexes were confirmed by ^1H NMR spectroscopy.

Formation of palladium catalyst from benzimidazolium salt and silver oxide that can be used in C-C coupling

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Imidazol-2-ylidenes have been extensively used as innocent ligands in catalytic processes. The target of this project was the synthesis and characterization of a new carbene-palladium complex that can be used in C-C coupling reactions. Imidazolium salts are good precursors for imidazol-2-ylidenes. The desired imidazolium salt was prepared by an alkylation reaction with ethyl bromide and benzimidazole. This salt was reacted with Ag_2O to yield a silver complex that was further used as a carbene transfer agent. This silver complex was converted into a palladium complex through transmetallation. The properties of the new complexes were investigated.

Synthesis and characterization of a series of diphenyldipyrzolylmethane complexes with zinc(II)

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Diphenyldipyrzolylmethane is a bidentate, neutral ligand containing two pyrazole groups available for coordination to metal centers. The sterics and electronics of diphenyldipyrzolylmethane can be adjusted by employing substituted pyrazole groups during ligand synthesis. This control over ligand design can be used to enforce a desired geometry at a metal center and to tune the reactivity of the metal ligand complex. The zinc(II) coordination chemistry of a series of diphenyldipyrzolylmethane ligands is presented here. Zinc is a biologically relevant metal that serves catalytic and structural roles in more than 300 enzymes. A common amino acid for zinc ligation in these enzymes is histidine, and diphenyldipyrzolylmethane ligands may serve as accurate structural models for the 2 His coordination environment found in proteins such as carboxypeptidase, thermolysin, and neutral protease. Unsubstituted diphenyldipyrzolylmethane (dpdpm), diphenylbis(3-methylpyrazolyl)methane (dpdp'm), and diphenylbis(3,5-dimethylpyrazolyl)methane (dpdp''m) were reacted with $Zn(NO_3)_2$ to afford $Zn(dpdpm)(NO_3)_2$, $Zn(dpdp'm)(NO_3)_2$ and $Zn(Pz'')_2(NO_3)_2$ where $Pz'' = 3,5\text{-dimethylpyrazole}$, respectively. All attempts to isolate $Zn(dpdp''m)(NO_3)_2$ with the intact dpdp''m ligand were unsuccessful due to decomposition of the ligand. Both dpdpm and dpdp'm support the formation of 1:1 ligand to metal complexes and structurally model the two histidine coordination mode common in zinc proteins.

Two-Dimensional Continuous Space in a Bioeconomic Harvesting Model

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Integro-Difference equations are used to produce a two-dimensional model of a plant population. It is assumed that this plant species is invading an area and has a negative effect on the native plant and/or wildlife population. Therefore, we want to determine how to optimally harvest the invasive plant in order to minimize the spread and minimize the cost of harvesting. Optimal Control Theory is used to create a Bioeconomic model. Several parameters are varied to show how they affect the outcome. The model is implemented in MATLAB and the results are displayed as movies.

Realizations of Graphs for Domination Ratios $\kappa = \gamma_t(G)/\gamma(G)$ for all Rational $\kappa \in [1; 2]$

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A set $S \cup \zeta$ is a dominating set of a graph $G = (V; E)$ if each vertex in ζ is either in S or is adjacent to a vertex in S . A vertex is said to dominate itself and all its neighbors. The domination number $\gamma(G)$ is the minimum cardinality of a dominating set of G . A set $S \cup \zeta$ is a total dominating set of a graph $G = (V; E)$ if each vertex in ζ is adjacent to a vertex in S . The total domination number $\gamma_t(G)$ is the minimum cardinality of a totally dominating set of G . An immediate bound on $\gamma_t(G)$ for graphs with no isolated vertices is $\gamma(G) \leq \gamma_t(G) \leq 2\gamma(G)$. Thus, for some rational $\kappa \in [1; 2]$, $\gamma_t(G) = \kappa \gamma(G)$ or $\kappa = \gamma_t(G)/\gamma(G)$. Examples of G that realize each boundary value are numerous. We show that every rational $\kappa \in [1; 2]$ can be realized by some graph G . Total domination is just one of many flavors of domination. This poster will also present similar results for other domination parameters.

Domination and Independence on the Rectangular Torus by Rooks and Bishops

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A set $\Sigma \subseteq V$ is a dominating set of a graph $G = (V; E)$ if each vertex in V is either in Σ or is adjacent to a vertex in Σ . The domination number, $\gamma(G)$, is the minimum cardinality of a dominating set of G . A set $\Sigma \subseteq V$ is a total dominating set of a graph $G = (V; E)$ if each vertex in V is adjacent to a vertex in Σ . The total domination number, $\gamma_t(G)$, is the minimum cardinality of a total dominating set of G . A set $\Sigma \subseteq V$ is an independent set of a graph $G = (V; E)$ if all vertices of Σ are pairwise non-adjacent. The independence number, $\alpha(G)$, is the maximum cardinality of an independent set of G . In this paper we compute these values for the rook and bishop on the toroidal $m \times n$ board.

Total and Efficient Domination in Graphs

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A set $S \subseteq V$ is a dominating set of a graph $G=(V,E)$ if each $v \in V$ is either in S or adjacent to $u, u \in S$. A vertex is said to dominate itself and all its neighbors. The domination number, $\gamma(G)$, is the minimum cardinality of a dominating set of G . For a graph $G, S \subseteq V$ is a total dominating set if every $v \in V$ is adjacent to a member of S . The total domination number, $\gamma_t(G)$, is the minimum cardinality of a total dominating set. An efficient dominating set exists if every vertex in V is dominated by exactly one vertex of S . The efficient domination number, $\gamma_e(G)$, is the minimum cardinality of the efficient dominating set. This poster looks at necessary conditions for a set to be both a total and efficient dominating set. As an application, we consider the existence problem for total, efficient dominating sets on chessboards.

Making Music Gives Life

Erica Eckman

Dr. David Thompson

Department of First-Year Studies
University College

This speech was prepared for Dr. Thompson's Public Speaking class, which was part of a learning community for first-year students in the Fall of 2008. It was entered into the fall Public Speaking Showcase and was awarded second place out of 27 competitors. The idea for the speech came from personal experiences in different band programs and the numerous benefits that came out of those experiences. Music programs have so many positive effects on people, but not enough people take advantage of opportunities to get involved with music. This persuasive speech makes this argument: More people should get involved with music programs because getting involved in a music program or learning to play an instrument affects your life physically, mentally, and emotionally.

Folio Thinking: Creating the Best of Show Portfolio from Design to Digital Delivery

Jennifer Schingeck, Department of Human Services, College of Health and Human Services

Dr. Joan E. Leichter Dominick, Department of University Studies, University College

Ms. Jennifer Schingeck took KSU 4401: Senior Seminar this past Fall 2008. As part of the institutional elective capstone course entitled KSU 4401: Senior Seminar, she created a best of show ePortfolios (electronic portfolios). This type of portfolio is designed to honor, understand, and connect student learning from self to global society. This process of creating a best of show portfolio is called folio thinking which develops the life-long learning habit of archiving, assessing, and sharing their learning with societal stakeholders in the areas of citizenship, community, and career. The folio thinking acts as a kaleidoscopic process which leads to a deeper view of understanding learning and develops a strategy for archiving, reflecting, and digitally sharing life-long learning for the empowerment of college seniors and their emerging roles as global citizens. The folio thinking process prepares students for life-long continued career development which demands an entrepreneurial approach of managing one's own progress as a knowledge worker in the 21st century. Ms. Jennifer Schingeck designed and delivered a superlative digital portfolio of such exceptional quality, that I secured her permission to showcase it at the 15th National Students in Transition Conference this past fall 2008. She allowed me to disseminate her work at this national academic conference. The focus of the conference is on innovative approaches to student success, one of which is for preparing college seniors for post university life. Ms. Jennifer Schingeck allowed her work to be linked to the conference presentation website I created for the conference. Additionally, she is presenting in my spring 2009 sections of KSU 4401: Senior Seminar on the design and digital delivery of the Best of Show Portfolio.

Ms. Jennifer Schingeck's Best of Show Portfolio showcased at conference:

15th National Conference for Students in Transition - November 9, 2008

Showcasing the KSU 4401: Senior Seminar Hybrid Course: Blending Web 2.0 with Face-to-Face Learning for the 21st Century Senior-Year Experience. Presenter: Dr. Joan E. Leichter Dominick. Presentation Website:

<http://www.joandominick.com/sit2008.html#http%3A//www.joandominick.com/scholarship.html>

Link to her Best of Show Portfolio on conference Presentation Website:

<http://www.jenniferschingeck.com/#http%3A//www.joandominick.com/sit2008.html>

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