

2005

# Celebration 2005 Abstract Booklet and Student Presentation Schedule

Xavier University - Cincinnati

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**CELEBRATION  
OF STUDENT RESEARCH  
AND CREATIVE ACTIVITY**

**XAVIER UNIVERSITY  
GALLAGHER STUDENT CENTER  
APRIL 4, 2005**

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# POSTER PRESENTATIONS

## 1. **RESPONSE TO REBIRTH: A SERIES OF MIXED MEDIA PRINTS**

**Sarah Plummer (Suzanne Chouteau)**

**Department of Art**

This series of mixed media prints express a theme of inspiration in my creative process. People, things, experiences, actions and places are a few daily things that inspire my work. But more personal, these are the things that keep me alive, keep me living day-to-day and challenging myself. The overall feeling of the artwork is determined by whether or not these things have a positive or negative affect on my life. These prints utilize photo emulsion screen print, lacquer thinner transfers, lithography and acrylic paint. The works vary in size and surfaces which include wood, paper, cloth and transparent materials. A depth of layers and tactile sensibility is the visual result; the conceptual implication is that each idea is wrought with complex dynamics of love and hate, give and take, joy and sorrow.

## 2. **ENLIGHTENMENT: A SERIES OF WORKS ON SILK**

**Mercedes Tryba (M. Katherine Uetz)**

**Department of Art**

This series of silk paintings resulted from a combination of synthetic dyes and salt, utilizing cold water resist, batik, and surface design techniques. These works explore the expressive potential of mark-making, and a variance in color saturation, which in turn portrays perpetual movement and a radiating light source. The pieces invite the viewer to experience energy, motion and luminosity.

## 3. **EFFECT OF INTERLEUKIN-2 ON BRADYKININ INDUCED VASODILATION IN THE BOVINE LEFT ANTERIOR DESCENDING CORONARY ARTERY**

**Kelley A. Barney, Brian R. Clear, Tony E. Garcia, Lauren M. Giulitto, Ashley M. McMaster, Bill N. Niehaus (Dr. Lisa Close-Jacob)**

**Department of Biology**

Interleukin-2 is a cytokine released during inflammation and has been measured at elevated levels in victims of idiopathic dilated cardiomyopathy. The goal of this experiment was to examine the relationship between interleukin-2 and bradykinin-induced endothelium-dependent relaxation of bovine coronary arteries. Left anterior descending coronary arteries were cut into 4 mm cross sections and suspended in tissue chambers. A steady state contraction was established, and the bradykinin-induced relaxation was measured in the presence of interleukin-2. We hypothesized that interleukin-2 would have an inhibitory effect on the relaxation response to bradykinin. At two tested concentrations of interleukin-2, trends indicated a decreased relaxation in the presence of interleukin-2, although early results do not indicate a statistically significant difference.

## 4. **THE EVOLUTION OF SKULL SHAPE IN CANIS FAMILIARIS**

**Jennifer Groszek (Dr. William Anyonge)**

**Department of Biology**

The mammalian genus *Canis* is comprised of eight species of coyotes, dogs, jackals, and wolves. All of the species have been known to hybridize, making it possible for any to be the ancestor of the domestic dog (*Canis familiaris*). Genetic and morphological studies suggest that the closest relative to the domestic dog is the grey wolf (*Canis lupus*). In this study, fourteen cranial measurements were taken of the skulls of eight domestic dog breeds and the grey wolf to determine the degree of similarity of the skull proportions of the two species. It was hypothesized that there would be significant similarity in the skull proportions of the domestic dog and the grey wolf. The findings of this study show that there are no significant differences in any of the cranial proportions of the domesticated dog and the grey wolf. These results are consistent with the hypothesis that during the evolution of *Canis familiaris*, the skull proportions have not significantly diverged from those of *Canis lupus*.

**5. EFFECTS OF DOMESTICATION ON SKULL MORPHOLOGY IN CATS**

**Christa L. Bernhard (Dr. William Anyonge)**

**Department of Biology**

The effects of domestication on skull morphology in cats were examined by comparing craniofacial morphology of domestic cats to other wild cats. The wild cats included in the study were the Caracal, Asiatic Golden Cat, Jungle Cat, African Golden Cat, Leopard Cat, and the African Wildcat. It has been suggested that the domestic cat is primarily from the African Wildcat with some interbreeding with other wild cats. This study was undertaken to further explore and develop the domestic cat lineage based on skull morphology. It was hypothesized that the domestic cat would have a skull morphology most similar to the African Wildcat, but would show significant differences from the other four wild cats examined. A total of eleven indices were chosen to reflect functional and shape differences between species, four from the upper skull and seven from the lower jaw. The measurements were then subjected to an analysis of variance using the statistical package Systat (10.2). Results showed that there was no significant difference in skull proportions between the domestic cat and the wild species. It can therefore be concluded that there has been no significant change in skull morphology due to domestication in cats; the domestic form is very similar to the wild form.

**6. CONSTRUCTION OF A PLASMID CONTAINING A DISRUPTED HYPOTHETICAL INTERMEDIATE FILAMENT GENE FROM *ASPERGILLUS NIDULANS***

**Colin K. Lane (Dr. Dorothy Engle)**

**Department of Biology**

This experiment was undertaken to construct a new plasmid which would contain a hypothetical intermediate filament gene from *Aspergillus nidulans*, which would be interrupted by a selectable marker, the pyr 4 gene from *Neurospora*. The purpose of this new plasmid would be to later use it to find the actual purpose of this *Aspergillus* gene through disruption. By using a traditional digest and ligate method, the hypothetical gene was removed from the *Aspergillus nidulans* genome and ligated into pGEM-3Zf + plasmid. After removing the selectable marker from a separate plasmid it was inserted into the hypothetical gene through blunt end ligation. It was found that the fragment containing the hypothetical gene was approximately 6kb long. The pyr 4 gene from *Neurospora crassa* is approximately 3.1kb long. After the ligation of the pieces it was found through colony blots that the hypothetical gene was interrupted successfully. But the size of the new plasmid was too large when compared to the estimated size. This was caused by multiple insertions of the pyr 4 selectable marker within the interrupted gene. This should not be harmful to future experiments with the new plasmid, pCKL2.

**7. A DETERMINATION OF EFFECTIVENESS OF CELL WALL LYSING ENZYMES IN *ASPERGILLUS NIDULANS* ON THE FORMATION OF PROTOPLASTS**

**Elizabeth Bertsch (Dr. Dorothy Engle)**

**Department of Biology**

The cell wall lysing enzymes, Driselase,  $\beta$ -D-Glucanase, *T. harzianum* Lysing Enzyme, and a combination of Driselase,  $\beta$ -D-Glucanase, and yeast lytic enzyme, will be tested for effectiveness when used to lyse the cell walls of *Aspergillus nidulans* to form protoplasts. The enzymes were chosen based on the results of previous studies from Jung, et al. (2000) and Birch and Denning (1998), in addition to cost and availability of the product. Based on previous research, it is hypothesized *T. harzianum* Lysing Enzyme will be the most effective and time efficient in protoplast formation. The protoplasting steps and all necessary media recipes were derived from the *Aspergillus* transformation procedure from James (persona communication). The protoplasts, after being placed in enzyme, will be checked at 1 hour, 1.5 hours, and 2 hours; these intervals were derived from previous studies of lysing enzyme effectiveness using *Aspergillus*. At each interval, a sample of the protoplasts in each enzyme solution will be counted by use of a hemocytometer and numeration will be determined per gram weight of mycelia. Based on these counts, the enzyme that is able to bring about the formation of the greatest number of protoplasts in the least amount of time will be deemed to be the most effective and time efficient regarding protoplast formation in *A. nidulans*.

**8. IDENTIFICATION OF A NOVEL GENE IN ASPERGILLUS NIDULANS**

**Kevin M. Bosse (Dr. Dorothy Engle)**

**Department of Biology**

With the whole genome sequencing of *Aspergillus nidulans*, many hypothetical genes and proteins have been identified. One such gene is locus AN6669.2, which is shown by BLAST analysis to be similar to MSTA, a member of the monosaccharide transport superfamily. MSTA proteins have been shown to be responsible for the transport of D-glucose primarily, as well D-fructose and D-mannose in species of filamentous fungi such as *Aspergillus niger*. I am using a new method, Double-jointed PCR, to create a knockout cassette containing a pyr4 resistance marker. Homologous double crossover will then be used to delete the gene within *Aspergillus nidulans* and a phenotype will be deduced. Successful recombinants will be grown on nutrient-specific mediums to help further understand the function of the gene.

**9. A PHYLOGENETIC ANALYSIS OF THE FLAGELLA PROTEIN NEXIN IN SEVERAL ORGANISMS**

**Megan Boyle (Dr. Dorothy Engle)**

**Department of Biology**

Nexin is a protein found in cilia and flagella, used to link microtubule dimers together. In this study a genetic analysis was made to investigate the evolution of the protein Nexin in several organisms. The BLAST (Basic Local Alignment Search Tool) analysis of the original protein from *A. mellifera* revealed 14 similar sequences in 11 different organisms over several phyla. The sequences were then analysed using ClustalW to demonstrate the similarity of amino acids in each organism's sequence. ClustalW allows the simultaneous comparison of multiple proteins. The analysis of each protein showed a general similarity in the center region of amino acids with variation in the outer regions of each organism. This suggests that the Nexin protein has a sequence of amino acids that is genetically conserved through out the different phyla.

**10. MANATEE DIRECTIONAL RESPONSE TO SOUND**

**M. Broestl, M. Bender, M. Dietsch, D. Jonatan, K. Konieczny, M. Latham, B. Schroeder, K. Smith, S. Whalin, S. Herbert (Physics), J. Johnson (WVXU), D. Bellman (Audiovisual), L. Hughes (Cinti Zoo), and J. Vogel (Cinti Zoo) (Dr. Charles Grossman)**

**Department of Biology**

Our group has been studying acoustical responses and associated behaviors in captive manatees to learn why they are killed in boat collisions in Florida. For 3 years we studied different pairs of male manatees housed at the Cincinnati Zoo. One member of the pair was always Stoneman but 4 other males (Douglas, then Dundee, then Hurricane and finally Rodeo) were all paired for different lengths of time with Stoneman. Our observations suggested that Stoneman's behavior changed as a result of different manatee pair interactions. Earlier we reported that when Stoneman was paired with Douglas he demonstrated significantly greater general motility (5.4 quadrants traversed or QT) vs Douglas (3.5 QT) ( $p=0.0000005$ ,  $n=238$ ). Now we report that from the Stoneman/Dundee pairing Stoneman's QT was 3.69 vs Dundee's QT of 2.54,  $n=61$ ; from the Stoneman/Hurricane pairing Stoneman's QT was 4.97 vs Hurricane's QT of 6.62,  $n=143$ ; and from the Stoneman/Rodeo pairing Stoneman's QT was 3.08 vs Rodeo's QT of 4.84,  $n=46$ . We hypothesize that the dominant animal in the pairing demonstrates reduced QT when compared with the submissive animal. This trend holds for Stoneman/Douglas, Stoneman/Dundee and Stoneman/Rodeo. It does not hold for Stoneman/Hurricane because Hurricane was ill and highly agitated

**11. IS THE DURATION OF MANATEE PAIR VOCALIZATIONS A POSSIBLE FORM OF INTERMANATEE COMMUNICATIONS?**

**Brad Schroeder, S. Herbert (Physics), J. Johnson (WVXU), L. Hughes (Cinti Zoo), and J. Vogel (Cinti Zoo) (Dr. Charles Grossman)**

**Department of Biology**

Our group has been studying acoustical responses and associated behaviors in captive manatees to learn why they are killed in boat collisions in Florida. Over a 3 year period we recorded manatee vocalizations produced between different pairs of male manatees. One member of the pair was always Stoneman but under the direction of the US Fish and Wildlife Service four other males (Douglas, then Dundee, then Hurricane and finally Rodeo) were paired with Stoneman. During our studies we digitally recorded over 1800 manatee vocalizations produced by these four manatee pairs. These recorded vocalizations were then analyzed based on the duration (in seconds) vs the frequency of occurrence (number of durations counted).

Our preliminary findings suggest that the duration of the pair vocalizations of Douglas/Stoneman ( $X=0.236$ ;  $SD=0.054$ ;  $n=1358$ ) appear similar to those of Hurricane/Stoneman ( $X=0.235$ ,  $SD=0.059$ ;  $n=293$ ). However, the pair vocalizations generated from Dundee/Stoneman appear to be shorter in duration ( $X=0.227$ ;  $SD=0.046$ ;  $n=118$ ). Data from Rodeo/Stoneman is still being collected and statistical calculations on the results will be run upon completion. We hypothesize that differences in vocalization patterns resulted from the aggressive behavior of Dundee towards Stoneman. Our observations suggested that the vocalization patterns changed during the different pair interactions.

## **12. AN EXAMINATION OF NITROGEN FIXATION FOUND IN *RETICULITERMES FLAVIPES***

**Lawrence Ian McCullough (Dr. Linda Finke)**

**Department of Biology**

Termites, by use of spirochetes in their intestines, perform nitrogen fixation in order to supplement their nitrogen-poor diet of woody plant tissue. The Eastern Subterranean termite (*Reticulitermes flavipes*) thus plays an integral part in the nitrogen cycle. As colony-forming insects, termites live in distinct castes that differ in their ability to fix nitrogen. The goal of this project is to attempt to demonstrate nitrogen fixation in worker termites collected from the local environment, and to assess the impact of temperatures on this activity. It is predicted that termites will show higher nitrogenase activity at higher temperatures in the range of 25 to 30°C. A sample of worker termites were obtained from a local park and tested for nitrogenase activity by use of the reduction of acetylene to ethylene and the Gas Chromatograph. The first group of worker termites obtained from the local environment did not indicate nitrogenase activity. However only 18 termites were obtained for the first sample. It is expected that the use of more worker termites would produce more conclusive results.

## **13. THE EFFECT OF PERCHLORATE ON A POSSIBLE PHYTOREMEDIATING LEGUME *TRIFOLIUM REPENS* AND ITS NITROGEN-FIXING BACTERIAL SYMBIONT *RHIZOBIUM MELILOTI***

**Holly Funk (Dr. Linda Finke)**

**Department of Biology**

The Perchlorate anion ( $\text{ClO}_4^-$ ), mainly used as a rocket propellant oxidizer, is a contaminant that is detected in all the U.S. Its high solubility properties allow it to percolate through soils into drinking water. Once ingested, it interferes with the thyroid's ability to take up iodide causing a decrease in the production of growth hormones, possibly leading to cancer. Phytoremediation, using plants to extract contaminants out of soil, has been shown to successfully remove perchlorate in wetland areas. However, the most perchlorate-contaminated area of the U.S. is the southwest, where numerous rocket testing industries are located. Due to the arid, low-nitrogen soil conditions found in the southwest, few species of plants are able to survive. Leguminous plants endure these conditions due to symbiotic relationships formed with bacteria that are able to provide organic nitrogen to the plant from  $\text{N}_2$ . The legume New Zealand White Clover (*Trifolium repens*), along with its nitrogen-fixing, symbiont (*Rhizobium meliloti*) were grown in perchlorate-contaminated, sandy soil. The plants were tested for nitrogen-fixation by an acetylene reduction assay, and the amount of perchlorate remaining in the soil was quantitated by methylene blue precipitation. Thus, the ability of the symbiosis to survive and remediate perchlorate from soil is determined.

## **14. SCREENING FOR PLASMIDS FROM NITROGEN-FIXING PHOTOTROPHS FROM NATURAL SOURCES**

**Jen Burke, Andrea Loeser, Ian Wenker (Dr. Linda Finke)**

**Department of Biology**

Nitrogen fixation is the process of converting atmospheric nitrogen to a reduced organic form of nitrogen that can be used by other organisms. Nitrogen-fixing bacteria perform this valuable process, and genes for nitrogen fixation are found in plasmids in some species. A variety of phototrophic bacteria fix nitrogen, among them the widely distributed species is *Rhodospseudomonas palustris*. A recently-published genome analysis of this organism included the sequence of its single plasmid, yet a previous study done at Xavier University found no plasmids in a natural isolate. We isolated pure cultures from three different sources in the greater Cincinnati area. Pure cultures were isolated by usual microbiological techniques using nitrogen fixation as the selection dynamic. Each species was screened for nitrogen fixation using an acetylene reduction technique. Plasmid DNA was then isolated from those three nitrogen fixing cultures, where present, using an alkaline lysis procedure. DNA samples were run on an agarose gel with *E. coli* as the control. The gels were stained with EtBr to visualize plasmids.



**15. THE EFFECT OF CHANNELIZATION ON STREAM MACROINVERTEBRATE DIVERSITY**

**Brandon Cheppa, Beth Chmelik, Kathryn Fulks, Christopher Goodman, Kelly Long, Thomas Mathews, Zachary Reid, Mark Simcoe (Dr. Stanley Hedeon)**

**Department of Biology**

This research was undertaken to study the effect of habitat modification on benthic macroinvertebrate populations. Seven stations were sampled at various locations along the Mill Creek. The study showed that as the Mill Creek became more channelized, the number of species decreased. Pollution was ruled out as a factor contributing to the decrease in macroinvertebrate abundance, since pollution-sensitive organisms were found at every site sampled along the Creek.

**16. IDENTIFICATION OF SEROTONIN RECEPTOR 5-HT<sub>2A</sub> ON THE SURFACE OF LACTATING MOUSE MAMMARY GLAND EPITHELIUM**

**Elisabetta Pietropaolo, Zachary J. Berrens (Dr. George A. Jacob)**

**Department of Biology**

Prolactin has been shown to up-regulate the expression of tryptophan hydroxylase (TPH) in mouse mammary epithelium. TPH is the rate limiting enzyme that catalyzes tryptophan to 5-Hydroxytryptamine (5-HT), commonly known as serotonin. Serotonin is an amine neurotransmitter synthesized and released in the brain. Prior studies suggest that serotonin in the mammary gland plays a role in involution after weaning. In order to completely determine the function of 5-HT in the mouse mammary gland, the serotonin receptor that is utilized must be identified. Preliminary PCR analysis of extracts from mouse mammary gland epithelium indicates the presence of 5-HT<sub>2A</sub> mRNA. 5-HT<sub>2A</sub> belongs to one of seven known classes of serotonin receptors. Mouse mammary gland epithelium extracts were subjected to SDS-polyacrylamide gel electrophoresis, transferred to a nylon membrane and subsequently probed with antibody to detect the presence of the 5-HT<sub>2A</sub> protein. If 5-HT<sub>2A</sub> is present, Western analysis will reveal a 55 kD protein.

**17. EVALUATING THE RELATIONSHIP BETWEEN H<sub>2</sub>O<sub>2</sub>-ASSOCIATED OXIDATIVE STRESS AND VON HIPPEL LINDAU (VHL) PROTEIN**

**Matt Rowe, Audrey Wysocki (Dr. Waltke Paulding)**

**Department of Biology**

Many environmental factors, including hypoxia, can induce oxidative stress. Cells that are subjected to oxidative stress often generate reactive oxygen species (ROS), which include hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). Familial von Hippel-Lindau (VHL) disease develops in individuals that are born heterotrophic for the wild-type (wt)VHL gene, and who subsequently lose the remaining wt-VHL allele due to mutation. Excessive, unregulated quantities of ROS are known to damage cellular macromolecules, including proteins lipids and nucleic acids. We are currently examining the oxidative status of cells that express (wt-VHL) or lack (mut-VHL) the VHL protein, as a decrease in a cell's ability to maintain "oxidative homeostasis" may be related to DNA damage, and expression of VHL pathology. Results from experiments in which H<sub>2</sub>O<sub>2</sub> production was measured in VHL(+) or VHL(-) cell lines, under either normoxic (21% O<sub>2</sub>) or hypoxic (1% O<sub>2</sub>) conditions, revealed higher, basal amounts of H<sub>2</sub>O<sub>2</sub> in VHL(-) cells in normoxic conditions, as contrasted to VHL(+) cells. Hypoxia reduced production of H<sub>2</sub>O<sub>2</sub> in both VHL(+) and VHL(-) cell lines. Evaluation of expression levels of superoxide dismutase (SOD) and catalase, the 2 main enzymes involved in regulating H<sub>2</sub>O<sub>2</sub> levels in the oxidative stress pathway, continue.

**18. COMPARISON OF POLYMORPHISMS IN THE CKMM GENE BETWEEN HIGH IMPACT ATHLETES AND GENERAL POPULATION**

**Michael R. Slaper, Christopher B. Kempe (Dr. Dorothy Engle)**

**Department of Biology**

The focus of this research was to use genetics to gather information that would lead to a greater understanding of why some people are more athletic than others. Creatine Kinase (CKMM) is an enzyme that functions in energy metabolism in muscle. The genetic sequence and the specific location of CKMM within the genome (19q13) are known. There are two possible polymorphisms that can be distinguished using *TaqI* and *NcoI* restriction endonucleases. First we worked out a protocol for collecting samples using mouthwash, and preparing the DNA. Next, using the Scope DNA collection method, DNA will be collected from male high impact athletes and male non-athletes (General Population). The subjects DNA will be amplified using PCR and then cut with either *TaqI* or *NcoI*, the resulting DNA fragments will be

run on an electrophoresis gel along with a standard 1kb ladder. The results will then be put through statistical analysis in order to determine if there was a link between high impact athletes and one of the two CKMM polymorphisms.

**19. DIFFERENTIATION IN SKULL MORPHOLOGY AMONG WOLF-LIKE CANIDS**

**Jill Swetel (Dr. William Anyonge)**

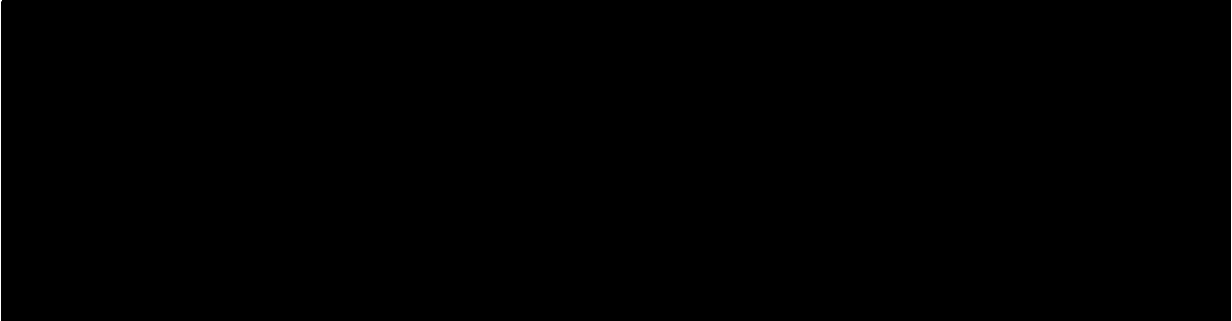
**Department of Biology**

Current phylogenetic data indicates that the gray wolf is most closely related to the domestic dog, followed by the coyote and the wild dog, whereas the jackals and bush dog are more distantly related to the other wolf-like canids. Based on divergence time since a common ancestor, it was hypothesized that the skull morphology would be most similar among the species in the genus *Canis* and other closely related species (wild dog and dhole), but more divergent in jackals and the bush dog. The craniodental morphology was compared among these wolf-like canids to ascertain whether there was congruence between morphology and phylogeny. Twelve cranial indices that were chosen to reflect skull shape and other metric properties of the skull were measured among these species and subjected to an analysis of variance. Results revealed a strong congruence between many aspects of the skull morphology and phylogenetics in the wolf-like canids. However, there was some indication of convergence in the functional morphology of the wild dog, dhole and bush dog that may reflect dietary adaptations.

**20. STUDIES ON THE USE OF HETEROCYCLIC COMPOUNDS AS CORROSION INHIBITORS**

**Oscar Alonzo (Dr. Aaron Baba)**

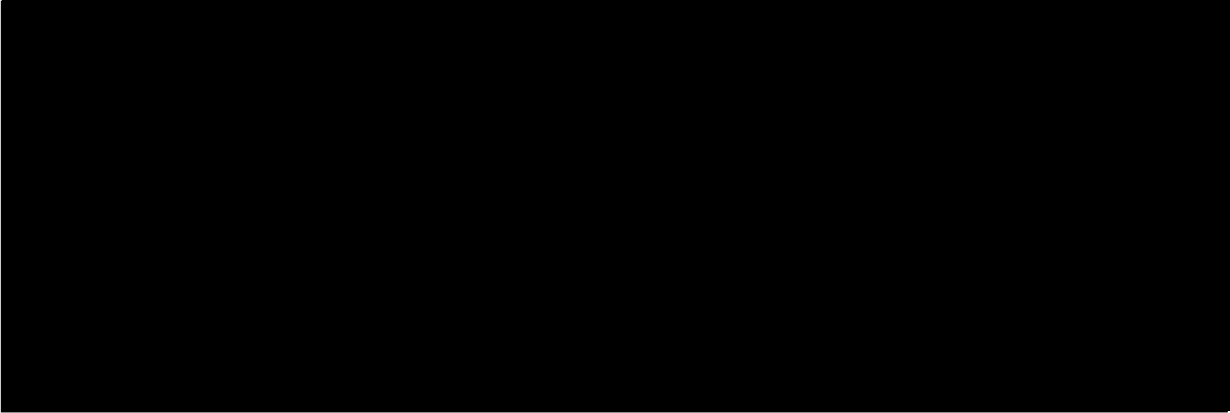
**Department of Chemistry**



**21. EFFECTS OF SUBSTITUENTS AND Ph ON RUTHENIUM AND RHENIUM COMPLEXES**


**Sarah Baker (Dr. Aaron Baba)**

**Department of Chemistry**




**22. A COMPARATIVE STUDY BETWEEN STANDARD AND FAST GAS  
CHROMATOGRAPHY TECHNIQUES**

**Trisha L. Tucker (Stephanie Pendergrass, NIOSH, and Dr. Barbara Hopkins, Xavier University)  
Department of Chemistry**



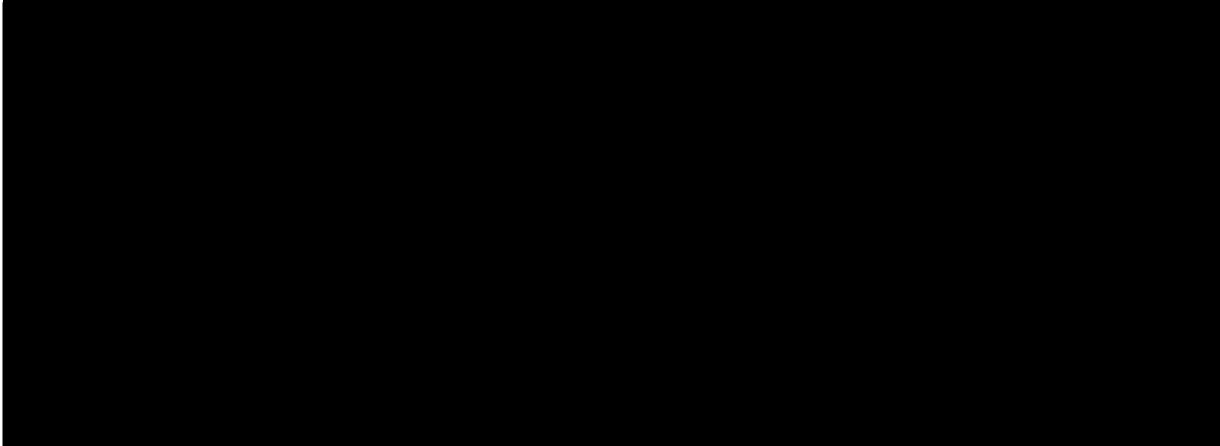
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ISOCYANATE GROUP: INVESTIGATION OF THE FORMATION OF ARTIFACTUAL  
PERIMIDONE ANALYTE**

**Fariba Nourian (Dr. Robert Streicher, NIOSH, and Dr. Barbara Hopkins, Xavier University)  
Department of Chemistry**



**24. METHOD DEVELOPMENT AND ANALYSIS OF ROXARSONE USING HIGH  
PERFORMANCE LIQUID CHROMATOGRAPHY-INDUCTIVELY COUPLED PLASMA  
ATOMIC EMISSION SPECTROSCOPY**

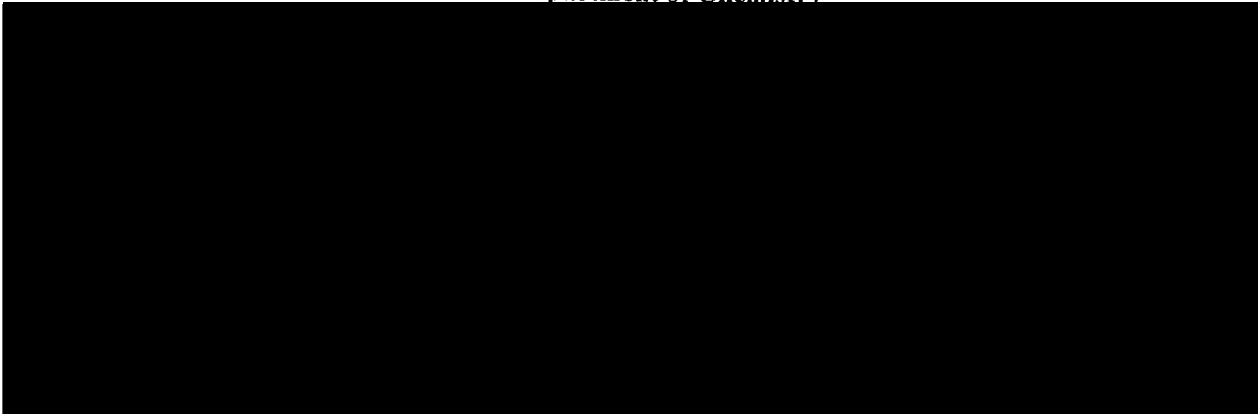
**Jennifer L. Ernst (Dr. Barbara Hopkins)  
Department of Chemistry**



**25. AN EXPERIMENTAL STUDY OF THE EFFECTS OF FILTER PAPER MEDIA AND  
MACHINED METALS ON THE ANIONIC CONCENTRATION OF METALWORKING FLUIDS**

**Robert D. McFarland (Dr. Daniel J. McLoughlin)**


**Department of Chemistry**



**26. EXPERIMENTAL STUDY OF THE EFFECTIVENESS OF POLY-3-METHYLTHIOPHENE  
AS AN INHIBITOR OF CORROSION OF (6061) ALUMINUM**

**Stephanie F. Potina (Dr. Isam Marawi)**

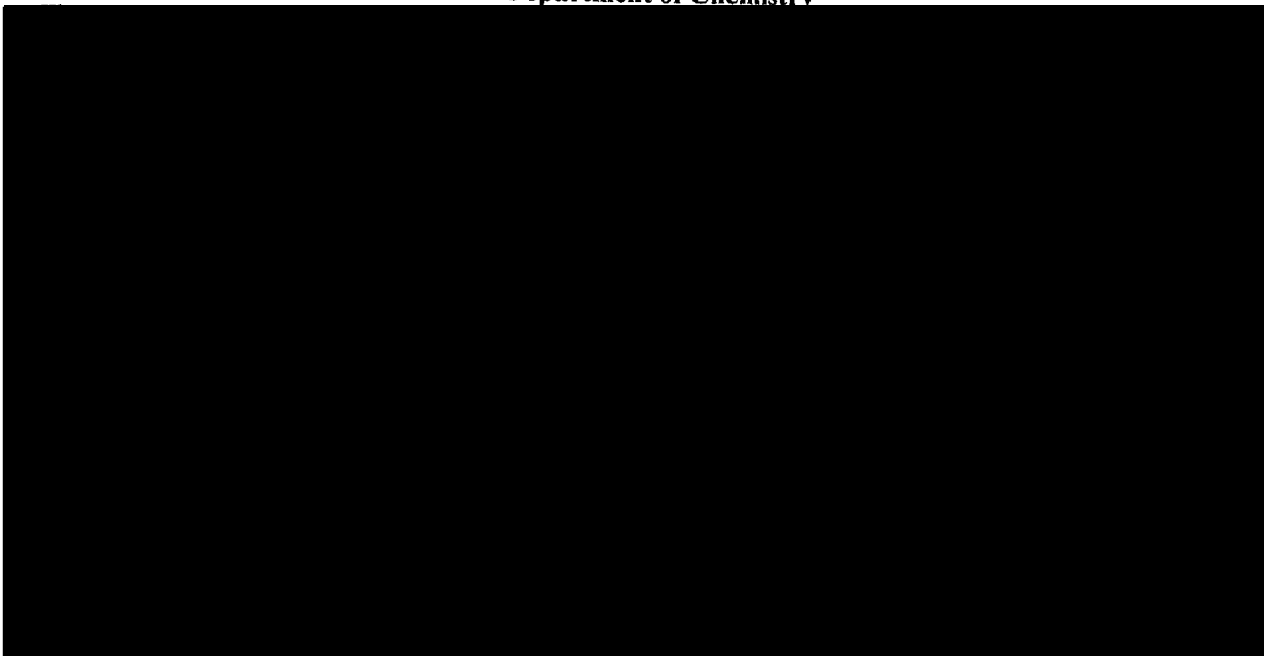
**Department of Chemistry**



**27. SYNTHESIS AND MEDICINAL CHEMISTRY OF KALKITOXIN**

**Rebecca L. Rohlf, Adam M. Azman (Dr. Richard Mullins)**

**Department of Chemistry**



**32. WHAT ARE THE EFFECTS OF YOGA ON FEMALE SURVIVORS OF DOMESTIC VIOLENCE?**

**Amber N. Carpenter, Amy M. Langhorne (Dr. Heather Gallow)**

**Department of Occupational Therapy**

Research suggests that the prevalence of domestic violence in the United States is alarmingly high. Female survivors of domestic violence are often forced to seek safe shelter from their abusers. These women experience chronic stress as a result of their situation. Stress has been linked to increased heart rate and blood pressure, as well as depression and anxiety. Studies have shown that yoga may improve an individual's physical, mental, and emotional well-being (Herrick & Ainsworth, 2000; Kleiner, 2002; Woolery, Myers, et al., 2004; Mehta, 2004). Due to its holistic approach to intervention, the field of occupational therapy is an ideal profession to explore the potential benefits of yoga practice in a shelter for survivors of domestic violence. This study assessed the effectiveness of yoga to improve or maintain heart rate and blood pressure, improve coping skills, and reduce stress in survivors of domestic violence. Quantitative data was collected and analysed to determine changes in heart rate, blood pressure, and stress level before and after each yoga session. Qualitative data was collected and analysed in the form of open-ended questions and an informal interview following the final yoga session. The results of these findings will be published at a later date.

**33. THE EFFECTIVENESS OF OCCUPATIONAL THERAPY WITH A MENTALLY ILL POPULATION**

**Scott D. Gould, Erin N. Hill (Dr. Heather Gallow)**

**Department of Occupational Therapy**

One in five citizens living in Ohio has a chronic mental illness, however many receive little or no treatment (Ohio Mental Health, 2001). Limited access and availability of mental health services is a worsening problem that affects people's ability to successfully participate in their life roles and engage in occupation (Ohio Mental Health, 2001). Occupational therapy values health and well-being through its holistic nature of care, and has roots in the field of mental health. The purpose of this study is to determine the effectiveness of occupational therapy intervention on promoting healthy lifestyles in individuals with chronic mental illness. Occupational therapy intervention in the form of a healthy lifestyles module will produce change in occupational performance among individuals with chronic mental illness as measured by the COPM. Participants will engage in an 11-week healthy lifestyles module aimed at exploring elements of occupation, habits, healthy eating, exercise, stress, and emotion. The results of these findings will be published at a later date.

**34. THE USE OF SENSORY-BASED TECHNIQUES TO INCREASE TIME ON TASK**

**Jane E. Oliver, Linda K. Marin, Gloria L. Davis (Dr. Carol Scheerer)**

**Department of Occupational Therapy**

Sensory-based techniques are used with individuals who have sensory-processing difficulties, which can lead to behavioural concerns. The use of sensory-based techniques such as chewing gum, walking, or squeezing a ball can help a person with sensory processing difficulties cope with their environment. The purpose of this study was to analyse the effectiveness of a sensory-based intervention on an adult population. The subjects were adults with mental retardation working in sheltered workshop that were also identified as having sensory-processing difficulties. The intervention was based upon a treatment called the Alert Program created by Mary Sue Williams and Sherry Shellenberger. The program was adapted for use in a work setting. An ABA interrupted time series design was used to analyse three independent case studies to determine if time on task and work production increased with the introduction of a sensory-based intervention. Results indicate that each subject increased their time on task and work production when intervention was utilized. After discussion with the work supervisors, it was concluded that the interventions were easily introduced into that work setting.

**35. PAY IT FORWARD: A LONGITUDINAL STUDY OF MENTORS AND THEIR MENTEES**

**Elizabeth A. Endres, Kimberly E. Sanders, (Dr. Carol Scheerer)**

**Department of Occupational Therapy**

The purpose of this study was to look at a longitudinal progression of mentorship. Five occupational therapists who shared one common mentor were interviewed to discover the influence that one individual can have on so many others. As a result, each of these five individuals identified two of their own mentees to discover the effects of the relationship and the longitudinal progression that occurred. This study is a continuation of previously published research on Virginia Scardina, mentor extraordinaire. Fifteen interviews were conducted to collect rich qualitative data concerning the process of mentorship. Through audio recording, transcription, and discovery of themes, it is hoped that mentoring will be proven as a valuable and useful process in both personal and professional relationships. It is believed that all individuals involved or wanting to become involved in a mentoring relationship will be able to learn and benefit from the knowledge that this study will produce. Results of these findings will be published at a later date.

**36.**

**ANIMAL-ASSISTED THERAPY**

**Betsy M. Maly, Sonya L. Betz (Georganna J. Miller)**

**Department of Occupational Therapy**

History has shown animals to provide many benefits for people including physical, social, psychological, cognitive and rapport-building effects. The question this study aimed to answer was: How will the use of animal-assisted therapy, involving introducing a therapy dog into occupational therapy sessions, for people with neurological disorders, affect subjects' standing tolerance and/or wheelchair mobility? A dog was incorporated into occupational therapy treatment sessions and quantitative data was collected and analyzed to determine if the dog had an impact on the subjects' standing tolerance and/or wheelchair mobility. Qualitative data was also collected and analyzed on motivation, affect, attention to task, standing tolerance, wheelchair mobility, and overall impact of the dog during treatment. Potential benefits of this study include providing evidence for animal-assisted therapy as an alternative treatment option and adding to the ideas for incentives and motivational agents used in therapy. The findings suggest that animal-assisted therapy is somewhat beneficial when implemented into treatment sessions. It was found that the subjects and therapists felt that the dog impacted therapy more than the quantitative data suggested.

**37.**

**NEAR EYE PROJECTION SCREEN FOR THE LETTER 'X'**

**Sam Bish (Dr. Heidrun Schmitzer, Dennis Tierney, Dr. Bernd Rossa)**

**Department of Physics**

The goal of this project is to make a near eye projection screen for the letter X which can be worn as glasses. The first step is to simulate the Fraunhofer (far-field) diffraction pattern of an aperture in the shape of an X. The second step is to make an aperture of an X and to verify our simulation. In the final step we record this diffraction pattern as a hologram and reconstruct it with a reference beam in front of the cornea. The cornea applies a Fourier transform to the diffraction pattern on the glasses before the image is received by the retina. Applying a Fourier transform to a diffraction pattern yields the aperture which produced the pattern, so we see the X when we look through the glasses.

**38. ANALYSIS AND SUPPRESSION OF POLARIZATION FLUCTUATIONS IN A SINGLE-MODE OPTICAL FIBER**

**Peter David (Dr. Heidrun Schmitzer)**

**Department of Physics**

Polarisation fluctuations in optical telecommunication networks lead to a deterioration of the transmitted signal. Current technology does not allow them to be completely suppressed. The goal is to design a device which reduces these fluctuations. We first describe these polarisation fluctuations mathematically as a random walk on the surface of the Poincare Sphere, which allows us to simulate them under various parameters. We then analyze actual data of polarisation fluctuations in light exiting a single mode optical fiber. Finally we compare this data to our model.

39.

# **SQUARE ORBITS**

**Michael J. Hinton (Dr. Steven Herbert)**

**Department of Physics**

Earnshaw's Theorem states that there is no absolute minimum potential for any fixed arrangement of charges in space. When restricted to two dimensions, local minima may be found using the potential function. In the case of four charges in the shape of a square, there exist five stationary points, one stable at the center and four unstable lying on the x and y axes. First, force analysis is used to show the positions of equilibrium. Next, the potential function is used along with a fifth unfixed charged particle to show that orbits with square symmetry can be produced. When other fixed arrangements of charged particles are formed in regular polygonal shapes, orbits which follow the symmetry of the charges can be formed inside the unstable equilibrium points by giving the unfixed particle proper initial conditions.

40.

# **ROTATING BACTERIA USING OPTICAL TWEEZERS WITH AN ELLIPTICALLY SHAPED FOCUS**

**Anneliese H. Spaeth**

**(Dr. H. Schmitzer, D. Tierney) Department of Physics**

**(Dr. J. Robbins) Department of Biology**

An intense light beam can hold a dielectric particle or a single cell bacterium, as with tweezers. With an optical tweezer it is therefore possible to transport micrometer size objects to different positions in a solution. We tweezed and steered elliptically shaped shigella bacteria. Because of their geometric form, they stand up in the focus, i.e. they orient themselves with their long axis along the laser beam axis. To avoid this we created an elliptical focus for the beam with a rotatable cylindrical lens. With this set up we can align the bacteria tip to tail, or even rotate them slowly around their short axis. We will describe our experimental set up and show some results of our experiments performed with living shigella bacteria.

41.

# **CRITERIA FOR FIRST IMPRESSION FORMATION**

**Sarah A. Jablonski (Dr. Cynthia Dulaney)**

**Department of Psychology**

Previous research has explored the relationship between common and uncommon first names on ratings of likeability (e.g., Haussebrauck, 1988; Karlin & Bell, 1995). In the current study, college students rated photos of individuals with either common or uncommon first names on characteristics of likeability (politeness, friendliness, intelligence, and attractiveness). A Participant Gender x Photo Gender x Common/Uncommon name analysis of variance was conducted on likeability ratings. Female participants rated both photos of a male and female with an overall greater likeability than male participants,  $F(1, 61) = 11.25, p < .01$ . The photos of females were rated with greater likeability than the photos of males by both male and female participants  $F(1, 61) = 126.67, p < .001$ . However, these main effects were qualified by a significant Participant Gender x Photo Gender interaction,  $F(1, 61) = 8.35, p < .01$ . The photos of females were rated similarly by male and female participants, whereas the photos of males were rated as less likeable by male participants than female participants. These findings can be attributed to gender, both of participant and person being rated, as a more prominent means of creating snap judgments than common or uncommon names.

42.

# **EFFECTS OF GLOBALIZATION ON AFRICAN PROVERBS: NEW RESOURCES FOR JUSTICE MINISTRY**

**Patrick A. Odongo (Dr. Marie Giblin)**

**Department of Theology**

Globalization is confusing to the majority of local men and women in many parts of developing nations. What they embraced as development, hoped would create job opportunities and use local resources to boost their economy have turned out to be their worst nightmare. Not even their governments seem to be able or willing to rescue them from their plight as casual laborers with minimal wages. For example, many Kenyans lack medical benefits, are sexually harassed by superiors while toiling in factories all night with all emergency exits locked. This poster shows how globalization has brought suffering and pain to the lives of many families and totally ignores the peoples' pleas for justice. The poster will also show examples of new proverbs that have emerged criticizing governments and corrupt leaders for abusing their power. These new African proverbs are a resource that can direct Christians in the fight against social injustices that deny many innocent peoples the right to afford dignified lifestyles in developing nations.

43. **THE EFFECT OF INCLINATION ANGLE ON PLANETARY STABILITY**  
**Rich Gauvin (Dr. Marco Fatuzzo)**  
**Department of Physics**

Recent discoveries have shown that many Sun-like stars in our galaxy are orbited by planets. Also, most solar type stars are found in binary star systems; that is, they are orbited by a companion star of lesser mass. The stability of an earth like planet's orbit in such a configuration is therefore relevant to the possibility of life like that on Earth existing outside our solar system. This project explores the stability of an earth like planet orbiting a one solar mass star in a binary star system with a companion star of lesser mass, focusing on the effect that inclination angle of the companion (relative to the Sun-Earth plane) has on the stability of the system. First, the stability of the earth like planet is determined by using a computer program to numerically solve the restricted three body problem by means of a Burlish-Stoer integration scheme. Second, this project seeks to discover the nature of planetary instability through a characterization of the eccentricity changes that ultimately lead to planetary ejection.

## **ORAL PRESENTATIONS**

### **ROOM 220**

1. **FACTORS AFFECTING PARENTAL NEST ATTENDANCE IN NORTHERN  
MOCKINGBIRDS (*Mimus Polyglottos*)**

**Michael F. Gaydos (Dr. George L. Farnsworth)**  
**Department of Biology**

Parents of altricial chicks are faced with the dilemma of balancing the time spent at the nest and the time spent away foraging. This study was undertaken to investigate the effect of several factors on the time spent at the nest for each visit by breeding Northern Mockingbirds (*Mimus polyglottos*). Data was collected during the 2004 breeding season on Xavier University's campus in Cincinnati Ohio. A total of six nests from four breeding pairs totaled 627 individual visits. For each visit the time was recorded when a parent arrived at the nest tree and when the parent left. The date, temperature, an index of cloud cover, an index of wind strength, age of the chicks, and brood size were recorded for each observation. The data was subjected to a backwards elimination regression model to determine which factors had significant effects on time spent at the nest. Regression results indicated the best predictors were: age, temperature, an interaction between chick age and number of chicks, and an interaction of chick age and temperature ( $p < 0.05$ ). Age and temperature main effects showed a negative correlation with time spent at the nest; whereas the two interactions showed a positive correlation with the amount of time spent at the nest. In conclusion, environmental factors may play an important role on the decision to forage or stay at the nest.

2. **NUMERICAL COMPETENCE IN WILD NORTHERN MOCKINGBIRDS (*Mimus polyglottos*)**  
**Jennifer L. Smolinski (Dr. George Farnsworth)**

**Department of Biology**

The purpose of this study was to determine the numerical competence of wild Northern Mockingbirds (*Mimus polyglottos*). The five individually color-banded subjects involved in the study established winter territories on Xavier University's campus. Each mockingbird was presented with a transparent acrylic bird feeder in which six holes were drilled on either side so that bamboo sticks could be easily inserted and removed. To obtain mealworms, the mockingbird needed to remove all of the sticks on one side of the apparatus. If the mockingbirds possessed numerical competence, we hypothesized that they would remove sticks from the side of the feeder that contained fewer sticks, so as to more quickly receive a food reward. The birds were presented with trials of 1 vs. 6, 2 vs. 5, and 3 vs. 4. Statistical analysis of the data was carried out using one-tailed sign tests. In the 1 vs. 6 and 2 vs. 5 trials, all five subjects showed a statistically significant preference for the side of the feeder containing fewer sticks, thus supporting our hypothesis. All of the subjects failed, however, to discriminate between 3 vs. 4. The results of this study support the optimal foraging theory in that the subjects consistently made decisions which required less expenditure of energy in acquiring food resources.



3. **THE NOT READY FOR DIONYSIA PLAYERS: THE ARISTOPHANIC TRADITION OF  
STAUDAY NIGHT LIVE**

Anthony McCosham (Dr. Edmund Cueva)  
Department of Classics

This thesis demonstrates that in both subject matter and style *Saturday Night Live* (*SNL*) is a descendant of Aristophanic comedy. The connection between the two becomes clear through a comparison of certain scenes in Aristophanes' plays to sketches that have appeared on *SNL*. The areas of study are, specifically, the mockery of politicians, artists and authors, radical thinkers, "the other," and the making fun of public figures by name (ἰνομαστὶ κωμῳδεῖν). The thesis will also show that the two genres share fundamental cosmetic and philosophical aspects. Both contain a certain amount of transvestitism, with all parts in Aristophanes played by men and *SNL*'s frequent use of men in women's parts. Moreover, while Aristophanes held a view that comedy should not only entertain but advise the state, Lorne Michaels, *SNL*'s producer, initially held "very messianic feelings about comedy, that it should be of some use." Ultimately, this thesis posits that, just as Aristophanes captured the essence of the people around him as Athens was in the midst of both a war and cultural enlightenment, so too does *SNL* capture the lives of the people who dot the national and international political and cultural landscape.

4. **DADDY'S LITTLE SHREW: HOW THE TAMING OF THE SHREW'S BAPTISTA TAMES HIS  
DAUGHTER KATE**

Sarah Wasserman (Dr. Charles Snodgrass)  
Department of English

Popular misconceptions of Shakespeare's *The Taming of the Shrew* (*Shr.*) being a sadistic comedy about spousal abuse have resulted in the play often being marginalized from classroom teaching and discussion. However, these misconceptions derive from Early Modern perceptions of perpetuated patriarchy that have resisted reassessment. Upon closer analysis, the abuse leveled at Kate originates, in fact, from her family and society. Through verbal abuse, comparisons to her ostensibly well-mannered sister Bianca, and her father Baptista's "merchant"-like marital dealing (2.1.318), Kate surrenders to her domestic role. Thus, contrary to conventional critical reception arguing otherwise, Kate has already been tamed by the time her suitor Petruccio enters the scene. In marrying Petruccio, Kate seems to follow the cycle of abuse from a demeaning father who disowns her to a demeaning man whom her father embraces. Yet, despite Petruccio's domineering rhetoric, Shakespeare reveals Petruccio's ability to crack Kate's domesticized shell, ultimately liberating her. Therefore, *Shr.* expresses not spousal oppression, but rather Kate's triumph over familial oppression and her final fulfillment found through Petruccio. In today's context, *Shr.* provides a victorious example of an empowered woman defeating society's hegemony and finding personal peace.

5. **LEGAL PRECEDENT AND CULTURAL SUPPORT FOR  
THE PASSING INTO LAW OF GAY MARRIAGE IN SPAIN**

Tim P. Shields (Dr. Ignacio Rodeño)  
Department of Modern Languages

In early October 2004, a bill was proposed to Spanish Parliament with the purpose of modifying the Civil Code to sanction marriage between two individual of the same sex throughout the nation. The bill would grant gay marriages in Spain the exact same rights as heterosexual married couples by eliminating all references to gender in the relevant sections of the Civil Code. The paper is an analysis of the legal precedent on the topic and the cultural backing. The legal precedent exists in the form of regional laws regulating civil unions between homosexual couples. Precedent also exists on the national level through laws regulating housing rights among others. The paper also takes a look at popular support for gay marriage, as seen through different organizations as well as the opposing voices, as best personified by the Catholic Church hierarchy.

6. **MINING DISJUNCTIVE ASSOCIATION RULES USING GENETIC PROGRAMMING**

Michelle A. Lyman (Dr. Gary Lewandowski)  
Department of Mathematics and Computer Science

Machine learning techniques can be used to mine trends in data sets. This paper reports findings mined from data collected in a card sorting exercise performed by beginning Computer Science students and their professors. Participants sorted 26 cards with Computer Science-related concepts written on them into groups based on their understanding of the concepts. An application was developed to mine overarching

trends in the way the participants sorted the cards. These trends were expressed in the form of disjunctive association rules. The application randomly generated association rules and then used genetic programming techniques to evolve them into rules with high support and confidence. When the card sorting data was segmented according to the achievement level of the participant, differences in the number of association rules produced by each group could be observed. This information, along with the actual association rules, can be used to present Computer Science concepts more effectively to beginning Computer Science students.

## **ROOM 330**

### **1. TOWARD A HOMERIC IDEAL: EXAMINING ROYAL PARADIGMS IN THE *ODYSSEY***

**Jay S. Arns (Dr. Shannon N. Byrne)**

**Department of Classics**

In this paper I intend to examine the different kings in the *Odyssey*, and what we can learn from them with respect to Homer's stance on what constitutes a good king and a bad king. This is useful for the reader because it allows him or her to view the actions of these characters with an eye toward what motivates them, as well as how they fit into the overall narrative of the poem. I will begin with the suitors, who quite obviously give the reader an example of bad kingship. They are living in another man's home, recklessly wasting his assets, and wooing his wife. These are not proper, kingly actions in the Homeric world. In addition, I will examine Polyphemus, who stands out as a foreign example of a poor ruler. His actions, specifically the horrific violation of *xenia* observances, serve as more examples of bad kingship. Finally, the discussion will turn to Odysseus himself. He is the paragon of kingly behavior in this work, and he is the character against whom the others must be compared to determine their goodness or badness. By examining these four, I hope to arrive at a clear idea of what traits Homer considered to be desirable and those he considered undesirable.

### **2. ANALYZING BRONISLAV MALINOWSKI'S CHARTER THEORY AND HOW IT APPLIES TO THE MYTH OF PENTHEUS AND DIONYSUS AS IT IS PRESENTED IN EURIPIDES' *BACCHAE* AND OVID'S *METAMORPHOSES***

**Robert W. Brewer (Dr. Shannon N. Byrne)**

**Department of Classics**

During World War I, Bronislaw Malinowski was stranded on the Trobriand Islands in the South Pacific. His experience, however, spawned a new theory for explaining the function of myth in society. Based on his observation of the Trobrianders, he suggested that myths serve as charters for rituals, institutions, and beliefs. In other words, the myths confirmed and validated the preexisting rituals and beliefs of the culture. This paper will attempt to examine the myth of Pentheus and Dionysus as it is presented in Euripides' *Bacchae* and Ovid's *Metamorphoses* in order to determine whether Malinowski's Charter Theory adequately explains the nature of the god Dionysus and his religion. This paper will firstly posit the established nature and habits of Dionysus and his religion as they have been set out by other scholars. Then, the author will analyze whether or not the two accounts of this myth in fact validate the beliefs about Dionysus and the rituals of his cult in the minds of the audience as Malinowski suggests.

### **3. CAPITAL PUNISHMENT IN ANCIENT ROME**

**Edward J. Clark (Dr. Shannon N. Byrne)**

**Department of Classics**

Capital punishment, as we have come to know it today, has been affected immensely by its history. The death penalty was used in ancient Rome, but I theorize that one will not find much of the ancient Roman standards or practices in our modern capital penal system. To prove my theory correct, I will present an in depth look at capital punishment in ancient Rome (i.e. methods, techniques, what warranted death, who would receive death, who had the power to sentence death, etc.). In order to make a comparison between the ancient and modern capital punishment systems, an adequate idea of the modern penal system must be presented. Once all of this has been done, it will be evident that the death penalty today is affected very little by the death penalty of the ancient world.

#### 4. SOCIOLOGICAL AND PSYCHOLOGICAL CHANGES IN THE CUBAN SOCIETY AFTER THE REVOLUTION

Christopher J. Bauchman (Dr. Ignacio Rodeño)

Department of Modern Languages

The socialist revolution has caused many changes and problems in the Cuban society in the last four decades, including an increase in suicide, drugs, violence, divorce, alcoholism, and depression, among the political and economic downfalls, of which need to be resolved with new and effective governmental programs that would adequately assist the population and their needs. The importance of moral and values with a lack of religious freedom will also be questioned. The beginnings of the revolution in Cuba and the new ideas and systems of a socialistic government will be observed in terms of development and processes. Solutions to these problems also include an increase in the education of prevention, the creation of more jobs, and an increase in availability of psychologists and counselors for the entire population.

#### 5. COUNTING THE NUMBER OF HOMOMORPHISMS BETWEEN $Z_m[\sqrt{2}]$ TO $Z_n[\sqrt{2}]$

Nick R. Imholte (Dr. James Snodgrass III)

Department of Mathematics and Computer Science

It is a common problem in many abstract algebra textbooks to determine the number of homomorphisms between various rings or groups. However, this is usually kept in a general sense, for instance between  $Z_{10}$  and  $Z_6$ . Joseph Gallian completed an analysis on the rings  $Z_m$  to  $Z_n$  and  $Z_m[i]$  to  $Z_n[i]$ , and both resulted in simple closed forms depending only on the values of  $m$  and  $n$ . Taking this a step further, here we determine what happens when you adjoin  $\sqrt{2}$  to the integers. Drawing upon techniques developed by Gallian, as well as a few tricks from number theory, we can produce results that are remarkably similar to the conclusions Gallian reached about the ring  $Z[i]$ . But more than being able to calculate the number of homomorphisms, we can in fact list off exactly what these homomorphisms are and write down explicitly what their formulas are. Specifically, all take the form of  $\Phi(a + b\sqrt{2}) = a\Phi(1) + b\Phi(\sqrt{2})$ , so the bulk of the work is simply determining the possibilities for the images of 1 and  $\sqrt{2}$ . The end result is the following nice statement. The number of ring homomorphisms from  $Z_m[\sqrt{2}]$  to  $Z_n[\sqrt{2}]$  is  $c_n 3^{\omega(n) - \omega(P)}$ , where  $P = n/\gcd(m,n)$ ,  $\omega(n)$  is the number of distinct prime factor of  $n$  in  $Z[\sqrt{2}]$ , and where  $c_n = 1$  if either 4 does not divide  $n$  or  $2 \mid P$ ,  $c_n = 5/3$  if 2 does not divide  $P$ , 4 divides  $n$  and 8 does not divide  $n$ ,  $c_n = 3$  if 8 divides  $n$  but 2 does not divide  $P$ , and  $c_n = 17/3$  if 16 divides  $n$  but 2 does not divide  $P$ .

#### 6. AN EXAMINATION OF DRUG USE AND ALCOHOL CONSUMPTION IN RELATION TO STRESS LEVELS IN COLLEGE STUDENTS

Christopher J. Bauchman (Dr. Cynthia Crown)

Department of Psychology

This study examined the correlation between stress levels and consumption of alcohol and other illicit drugs. Specifically, college participants completed three surveys; the Alcohol Use Disorders Identification Test, a drug use survey, and a stress level survey. The study also examined the gender difference and the use of alcohol and drugs between males and females. Consistent with past research, males have been correlated with the use of alcohol to cope with high stress levels and females have been correlated with the use of cigarettes as a means to cope with high stress levels. These findings were discussed in developing future therapy for students with drug/alcohol abuse as well as prevention techniques.

#### 7. JOHN JOHNSTON AND THE TREATY OF ST. MARY'S, 1818

Matthew J. Feeney (Dr. K.M. Tiro)

Department of History

The Treaty of St. Mary's was signed on September 17, 1818, and began the era of Indian Removal. The beginning of this era is generally designated to be the 1820's but in fact it is with this treaty that the removal of the first Indians from Ohio and the Indiana Territory would take place since the War of 1812. Prior to this the Senate refused to ratify the only treaty to try to remove Indians from this territory. This paper argues that the Treaty of St. Mary's is of greater historical importance than has previously been realized. John Johnston, the Indian Agent at Piqua, Ohio played an important role in bringing this treaty about. It was his job to convince the Indians to come to the treaty as well as handle the logistics such as supplies. The John Johnston Papers, which is the principal source for this paper, provides much of the detailed information about this treaty.