

Review: 2003 Apeiron

Poster Session #1 - Washburn Room A

2:00 p.m. – 3:00 p.m.

#37 **Mathematicians of Yore: Controversy, Fame, & Genius** (Part 1)

Jenny Banks, Tammy Conley, Fred Hollingshead, Cory Kramer, Michael Roe, Joe Marie Rozzelle

Advisor: **Dr. Pat Mower, Mathematics and Statistics**

The history of mathematics is steeped in controversy and debate. Famous and infamous mathematicians invented or discovered (depending on your stance on mathematical creativity) elegant and complex concepts. Many of these creations were based on earlier work and often debate arose regarding the actual inventor or discoverer. The students will portray their characters (in costume and in verbal exchanges with the persons who stop to view their posters), and make their cases for the creations in debate.

#25 **Enterococci in Public Places**

Jon Benson; Advisor: **Dr. Ron Ash, Biology**

Enterococci, normal inhabitants of the gastrointestinal tract, are recognized as important bacterial pathogens. Antibiotic-resistant enterococci represent an important clinical challenge. The present study was undertaken to determine the prevalence of such enterococci in public restrooms. Samples from toilet seats were taken at locations frequented by the public, e.g., shopping malls, libraries, restaurants, highway rest stops, and university buildings. Swabs moistened in LB medium were used for sampling. The isolates were collected on bile esculin azide agar plates. Colonies showing a blackening of the medium were verified as enterococci by specific tests. Samples were collected at 35 different sites and 260 individual seats were sampled. Enterococci were detected on 20% of the seats. The number of bacteria resistant to clinically useful antibiotics was only 11%. The results suggest that enterococci in public places do not pose a significant public health threat.

#13 **Ovarian Fluorescent Patterns and Changes During Germ Cell Maturation in Drosophila Melanogaster**

Michelle Blume; Advisor: **Dr. Tom Wolf, Biology**

Our laboratory has been conducting studies on the natural fluorescent patterns occurring in *Drosophila melanogaster*. These patterns are found in the facial, genital, and abdominal regions. This study is focused on ovarian fluorescence and the changes that occur during germ cell maturation. The fluorescent patterns differ between mature and immature females with the former exhibiting more fluorescence. And patterns also appear to differ among females that are cultured with a group of other females and those females that are isolated. This study was conducted to compare the quantitative fluorescent patterns among these individual groups. One aspect of this study was to determine the cytological source of the fluorescence. Image analysis revealed that the fluorescence was most concentrated in the oocyte. Gel electrophoresis analysis was done to determine the chemical basis of the fluorescence. A molecule naturally occurring in *Drosophila melanogaster* that has been shown to cause natural fluorescence, 20-hydroxyecdysone, was investigated as a possible source of the ovarian fluorescence. Yolk proteins were also investigated as a contributing source to the fluorescence.

#36 **A Potential Role of Fluorescent Facial Patterns in Mate Choice of D. Melanogaster From Evolution Canyon**

Michelle Brady; Advisor: **Dr. Tom Wolf, Biology**

Our laboratory has been investigating the role of naturally occurring fluorescent patterns in *D. melanogaster*. These patterns are brighter in males. Previous work from our laboratory on flies from Evolution Canyon, Israel, has shown a correlation between the intensity of the facial patterns and mating success. Flies on the same side of the canyon have similar pattern intensities. Pattern intensities differ not only in populations from opposite sides of the canyon, but within same side populations. Mate choice has also been shown to be preferentially influenced by geography (same side of the canyon), as well as within the specific subpopulations. This study was done to determine if these mating differences could be linked to changes in the facial fluorescent patterns in the flies from opposite sides of the canyon. The poster will present results of facial pattern differences that appear when high/low intensity pattern populations from the same side and opposite sides of the canyon are mated. Analysis of fluorescent intensity data are shown along with photographs of these patterns.

#27 Proximate and Ultimate Explanations of Paternal Infant Care in Cotton-Top Tamarins (*Saguinus Oedipus*)

Angela Burrell; Advisor: **Dr. Joanne Altman, Psychology**

Cotton-Top tamarins are very unusual among primates in their paternal infant caregiving. While most primate infants are tended by their mothers, tamarins are raised primarily by their fathers. This presentation discusses the hormonal (proximate) and evolutionary (ultimate) explanations for this unusual primate pattern.

#17 The Effects of Pregnancy on the Behaviors of Female Orangutans In Captivity

Beverly A. Fox; Advisor: **Dr. Joanne Altman, Psychology**

This study examined the effects of pregnancy on social interactions of orangutans in captivity using a scan sampling technique. The behaviors of a pregnant orangutan and another orangutan were recorded as well as another group of orangutans that did not include a pregnant female. The female orangutans were observed engaging in social interactions a greater percent of the intervals compared to the group that did not have a pregnant female orangutan present.

#3 Battles of Medusa - Are we dealing with domestic violence?

Julie Gibbs; Advisor: **Dr. Edward Navone, Art**

Battles of Medusa is a sculpture dealing with domestic violence and the way our culture deals with it. Much of the statistical information about domestic abuse was gleaned from crime statistics and government sponsored web sites. During the construction of the sculpture, I did plaster mold construction, researched clay bodies, learned to weld, did sheet metal construction and used various air tools. I also utilized documentary photography, darkroom techniques, scale techniques for drawing and printmaking methods for applying the images to the armature.

#33 Effects of leaf extracts of elephant bush (*Portulacaria: Portulacaceae*) on brine shrimp, bacterial, and fungal cultures

Carolyn Hahn; Advisor: **Dr. Vic Landrum, Biology** and **Dr. Sam Leung, Chemistry**

Elephant bush leaves are an important herbal source of native medicines in southern Africa, but little is known of the compounds contained in these leaves. Leaf extracts were chemically isolated to obtain potentially active biological compounds, and were tested on brine shrimp, bacterial, and fungal cultures for toxicity levels. Several compounds were toxic, but lack of leaf material prevented any structural analysis.

#21 Extraction and Partial Characterization of Freshwater Green-Algae Proteome

Rachel Halpin; Advisor: **Dr. Janice Barton, Chemistry**

In the present study, extracting and concentrating methods were refined in order to deliver maximum protein concentrations for two species of filamentous, freshwater green-algae. Non-continuous SDS PAGE followed by the use of Coomassie Blue R revealed several protein bands. When gels of the unidentified filamentous green-algae were scanned and digitized (using UNSCAN-IT software), seven proteins were found which ranged in molecular mass from 36 to 68 kD.

#1 Auditory Trajectory Perception

Megan Houk; Advisor: **Dr. Michael Russell, Psychology**

The ability of sighted but blindfolded observers to judge the trajectory of a sound source was determined in the present study. Of interest was whether humans, when relying solely on sound, are capable of detecting the direction of a moving sound source. For example, are humans able to correctly judge when an object is coming straight at them? The sound used in this study was a steel wheel rolling down an aluminum ramp. The participant's task was to determine if the sound source (i.e., the wheel) would pass by their right, left, or would contact them. The effect of the direction or angle of the ramp (relative to the point of observation), the position of the observer, and the influence of pre-trial sounds were each examined. The present study is expected to increase our understanding of how moving sounds are perceived and our knowledge of auditory perception in general.

#9 Initial Syntheses and ¹H NMR Analyses of 2,2'-Bipyridyl Cobalt(III) Complexes

Zeb Kramer; Advisor: **Dr. Shaun Schmidt, Chemistry**

The effect that transition metal coordination has on organic ligands can be studied by cataloging and examining the chemical shift in one and two dimensional ¹H and ¹³C NMR spectra of several simple organic molecules complexed with diamagnetic Co³⁺. In the initial stages of this study, standard methods used to synthesize Co³⁺ complexes with 2,2'-bipyridine (bipy): [Co(bipy)2CO3]Cl · 4H2O, [Co(bipy)2C2O4]X (where X = Cl⁻, NO3⁻, SO4²⁻, I⁻, and Acetate), and [Co(bipy)2I2]I. Attempts to isolate [Co(bipy)2Cl2]Cl were unsuccessful; this may be due to incomplete or competing reactions such as aquation. The complex [Co(bipy)2C2O4]X has limited solubility in various common solvents, which will cause difficulty in the NMR analysis. IR Spectroscopy was used to further characterize [Co(bipy)2C2O4]X, [Co(bipy)2CO3]Cl · 4H2O, and [Co(bipy)2I2]I. NMR and UV-Vis spectroscopy was performed on

[Co(bipy)2CO3]Cl · 4H2O. In addition, NMR spectroscopy was performed on [Co(bipy)3]ClO4. More spectroscopic and synthetic work remains before any conclusions can be drawn from the NMR analyses. This research was supported by a Small Research Grant from Washburn University.

#4 **Apeiron Logo**

Monette Mark-Carruth; Advisor: **Dr. Glenda Taylor, Art**

Creation of the Apeiron logo began with research about the word. The word "Apeiron" is used in several different disciplines but most prominently in philosophy and mathematics. Mathematicians struggle to find a balance with the infinite, unbounded $\alpha\pi\epsilon\iota\rho\upsilon\nu$ (apeiron) from the Greeks, with the equation $\sum_{n=1}^{\infty} \frac{1}{2^n} = 1$. Using symbols, the Lemniscate and Greek letters that make up the word apeiron, different designs began to come together to form the logo for this Apeiron Forum.

#35 **Factors Affecting the Perceived Spaciousness of Rooms**

Kathryn Maxwell; Advisor: **Dr. Michael Russell, Psychology**

The present study investigated individual perception of the spaciousness of rooms. Participants viewed seven rooms of various sizes and then judged each room on a scale of 0 (not spacious) to 10 (highly spacious). The influence of the point-of-view, room size, presence of a change in wall texture, and the presence of a fixture were each independently investigated with regard to spaciousness perception. Spaciousness judgments were found to be affected by room size, viewpoint, and change in wall texture. Contrary to what would be commonly expected, the presence or absence of room clutter had no appreciable effect on observer's judgments of spaciousness. The study hopes to contribute a better understanding towards the development and structure of rooms so that maximum spaciousness and, thus, maximum productivity will be achieved.

#29 **Finding Solace in Series**

Jan Polsley; Advisor: **Dr. Kevin Charlwood, Mathematics and Statistics**

Finding Solace in Series will be a presentation covering several properties of a "sub-series" of the Maclaurin expansion of e^x obtained by taking the terms of the form $\frac{x^{(k^2)}}{(k^2)!}$ for non-negative integers k . By using several theorems the presentation will entail looking at the interval of convergence of the series, the first derivative, the second derivative, and the integral of the series. Other properties that are explored are the intercepts of the series, the first derivative, and the second derivative. Extremes and inflection points will be looked at for the three graphs as well.

#32 **Effects of Stem Extracts of the Elephant Bush (Portulacaria afra; Portulacaceae) on Brine Shrimp, Bacterial, and Fungal Cultures**

Jay Reed; Advisor: **Dr. Sam Leung, Chemistry** and **Dr. Vic Landrum, Biology**

The elephant bush (*Portulacaria afra*; Portulacaceae), a native of southern Africa, has adapted to harsh xeric conditions by evolving stem and leaf succulence and anti-herbivory compounds. To test for potential anti-tumor compounds stem extracts were isolated using column chromatography and tested in brine shrimp, bacterial, and fungal bioassays. Certain fractions from stem extracts were found to possess compounds that were lethal to brine shrimp cultures at low concentrations; however, no extracts were found to be effective against bacterial (*E. coli*) and fungal (*Aspergillus nigr*a) cultures.

#7 **Auditory Perception of Passage**

Amy Schneider; Advisor: **Michael Russell, Psychology**

It has been shown that sound location is judged more accurately if observers are permitted to move during broadcast than if stationary. In this study, participants, from various positions, reported whether or not they would collide with a sound source if they had walked forward. The importance of observer movement and the position of loudspeaker and observer are discussed.

#23 **The Effect of Sex and Color on One's Ability to Interpret Facial Expressions**

Lori Sharon; Advisor: **Dr. Joanne Altman, Psychology**

This study examined one's ability to interpret facial expressions. Traditionally, women are better at recognizing expressions than men; particularly expressions of negative emotions. This study investigated whether colors, which are tied to emotions, can facilitate (when congruent with color) or inhibit (when incongruent with color) men's and women's interpretation of expressions.

#31 **Inscape - Washburn's Literary Magazine**

Greg Swart and **Joshua Falleaf**, Advisor: **Amy Fleury, English**

Inscape, Washburn University's literary arts magazine, features fiction, poetry, essays, and photography by students, faculty, staff, and members of the surrounding community. The magazine, edited by English writing emphasis students, is in its 28th edition in 2003.

#5 Personality Type and the Accuracy in the Recognition of Facial Expressions

Sara B. Thomas; Advisor: **Dr. Pam MacDonald, Psychology**

The ability to decipher facial expressions is vital for the survival of the human species. Humans interact with one another constantly and have a general need to understand one another. With the lift of an eyebrow, or a twitch of an eye, a person can tell so much about what they need or how they are feeling. As early as infancy, humans are already able to distinguish some facial expressions, and will only fine tune this skill as time progresses. After infancy, further development of the brain enables women and men to interpret facial expressions differently. It has been shown that women can distinguish facial expressions better than men, and it seems to be an evolutionary trend. The present study examined if femininity in both women and men was the factor in distinguishing facial expressions. Using the BEM Sex Role Inventory (BSRI), men and women could be put into categories of femininity or masculinity based on their answers. They were then asked to rate facial expressions with the Ekman and Friesen=s (1975) AUnmasking the Face@. Putting these two things together, we were able to determine what impact femininity had on deciphering facial expressions.

#19 Survey of Kansas Voter Awareness Prior to 2002 Election

Kacie Wessel; Advisor: **Dr. Steve Cann, Political Science**

This was a survey of 58 randomly selected citizens to assess issue and candidate awareness as the dependent variable. Various background variables were used as independent variables. The results indicate that a history of voting in past elections was highly associated with candidate familiarity and those without a voting history were not familiar with the candidates. Propensity to pay attention to news coverage, to be registered to vote and high socioeconomic status were associated with issue familiarity.

Poster Session #2 - Washburn Room A

3:15 p.m. – 4:15 p.m.

#14 Auditory Perception of Motion

Kathy Bullard; Advisor: **Dr. Michael Russell, Psychology**

This study is concerned with the ability of participants to determine if a sound source is either moving or stationary. Various natural sounds were recorded into a computer. For each sound, the sound-producing object either approached, retreated, or was stationary with regard to the recording device. The task of each participant was to determine whether the sound source was stationary or moving. If moving, the participant must also report whether it appeared to be approaching or withdrawing. Successes were determined by the number of times a participant accurately judged the direction of motion or the nonmotion of the sound source. Discussion is given to the influence of the particular sound heard, the direction of motion (or lack of motion), and the degree of change in the sound signal.

#26 The Effects of College Student Living Arrangements on Student Involvement in Campus Activities

Nicole Craver; Advisor: **Dr. Joanne Altman, Psychology**

This study rated student involvement in campus activities as a function of living arrangements (on versus off campus living). Student volunteers were administered the College Student Experiences Questionnaire which was used to indicate involvement. It was hypothesized that students living on campus would be more involved than students living off.

#37 Mathematicians of Yore: Controversy, Fame, & Genius (Part 2)

Mary Feltner, Inshin Kim, Cory Kramer, David Sloop, Chad Thompson

Advisor: **Dr. Pat Mower, Mathematics and Statistics**

The history of mathematics is steeped in controversy and debate. Famous and infamous mathematicians invented or discovered (depending on your stance on mathematical creativity) elegant and complex concepts. Many of these creations were based on earlier work and often debate arose regarding the actual inventor or discoverer. The students will portray their characters (in costume and in verbal exchanges with the persons who stop to view their posters), and make their cases for the creations in debate.

#1 Mural project for the courtyard between the Student Union and the "Commons" of the Living Learning Center

Maria Guzman, Judith Wade, Kye Suk Field; Advisor: **Dr. Edward Navone, Art**

This project involved the development of a mural to be placed in the courtyard between the Student Union and the "Commons" of the Living Learning Center. It is the collaborative effort of three students - Maria Guzman, Judith Wade and Kye Suk Field. Their ideas include the following concepts: the student experience in relation to the worlds of nature, thought and human experience - in other words, what a university is. It involved not only the creative work but the special challenges related to the building and materials and techniques to be used.

#34 Effects of Drag and Lift on a Golf Ball

Sarah Harrington; Advisor: **Dr. Kevin Charwood**, **Mathematics and Statistics**

I am using a mathematics program called Maple to simulate the effects of nonlinear lift and drag forces on a golf ball as a projectile. Newton's law of damping was used to derive differential equations that describe the motion of the golf ball with lift and drag on a y-z plane. The drag coefficients and launch angles were changed to observe how accurate the model is and compared with published data. Plots of the data will be shown with and without the effects of lift and drag so that they can be compared and can be seen by the viewer.

#18 Effects of Irrelevant Information on Mediator Decisions

Kristen Hinrichsen; Advisor: **Dr. Michael Russell**, **Psychology**

To determine the extent to which emotion affects decision making, participants in the present study were provided with a fictional story about a land dispute between two farmers. The task of the participant was to decide whether to find exclusively in favor of farmer A or B. Participants were assigned to one of five conditions. In four of the conditions, there existed a single sentence that contained irrelevant but emotionally affective information. In the fifth (control) condition, the irrelevant information was absent. After reading the story, participants were allowed ten minutes to reach a decision. Following the deliberation period, participants noted their decision and then completed a brief questionnaire. The influence of irrelevant information on the time to reach a decision and the factor(s) affecting their decision was determined. This study will give insight into how emotion may make mediators unjustifiably biased in their decision.

#22 Using Degenerate Polymerase Chain Reaction to Identify the Putative Telomerase Gene(s) in the Free-Living Amoeba Genus, Naegleria

Daniel J. Hulse; Advisor: **Dr. John Mullican**, **Biology**

This is the first attempt to identify the gene(s) responsible for telomere maintenance in the protozoan genus Naegleria. Naegleria spp. are free-living amoebae that are ubiquitous in nature on every continent. As unicellular organisms, we hypothesize that during DNA replication these cells maintain a constant telomere length by utilizing a telomerase-mediated maintenance system. Known telomerase protein sequences were obtained from various public databases and aligned using the PILEUP alignment program. Primers were designed from two highly conserved protein motifs. Degenerate PCR amplification of Naegleria genomic DNA produced several distinct DNA products under 1000 bp in length, each of which are likely telomerase candidates based on their size. These results suggest that Naegleria amoebae contain either telomerase or telomerase-like sequences and that these amino acid sequences are fairly well conserved. Cloning and sequence analysis of these amplified products will be performed to determine their relatedness to known telomerase sequences.

#8 Sulfadiazine-Resistant Bacteria in Natural Water Sources

Jamey Iverson; Advisor: **Dr. Ron Ash**, **Biology**

Sulfa drugs have been used as antibacterial agents since 1935. This continuous use has resulted in the selection of resistant organisms. Despite this fact, the sulfa drugs are still clinically relevant compounds, especially when administered with other agents. The present study was undertaken to evaluate the prevalence and properties of sulfa-resistant bacteria in the environment. Water samples were collected from seven U.S. rivers. Sulfa-resistant isolates were evaluated for resistance to other antibacterial drugs, the presence of plasmids (extrachromosomal DNA), and integron sequences. Over 80% of the sulfa-resistant bacteria were resistant to other antibiotics. Plasmids were found in 40% of the isolates and integron sequences were identified on 40% of the plasmids. These results suggest that sulfa-resistant bacteria with the capability of transferring resistance traits to other bacteria are abundant in natural water sources.

#16 Oxidation Of α -Methylpyrroles and Dipyrromethanes Using Sodium Bismuthate: Preliminary Results

Danson Kamunyu; Advisor: **Dr. Sam Leung**, **Chemistry**

Sodium bismuthate was investigated as an alternative reagent for oxidizing α -methylpyrroles and dipyrromethanes to their corresponding carbonyl compounds. The reactions were carried out with sodium bismuthate in the presence of acetone, water, and/or acid catalyst. In some cases, the oxidation was successful though with side products.

#15 Fluorescent Facial Patterns Due to Interactions Between Cuticular Tissue and Brain Autofluorescence in *D. melanogaster*

Danson Kamunyu; Advisor: **Dr. Tom Wolf**, **Biology**

Our laboratory has been investigating the role of naturally occurring fluorescent patterns in *D. melanogaster*. The facial fluorescent patterns appear to be species specific. These patterns are more intense in males and may play a role in mating behavior. The source of this fluorescence is unknown. Our first hypothesis was that the cuticle itself was the source of fluorescence. However, when the cuticle was removed and observed under ultra-violet (UV) alone, it did not fluoresce. *D. melanogaster* brains were isolated and exposed to UV light. There was an equal distribution of fluorescence. We hypothesized that the facial patterns of fluorescence are due to interaction between cuticular tissue and neuronal autofluorescence. Mutations that cause changes in the cuticle alter

facial fluorescence patterns in the same species. However, fluorescence of isolated brain is not changed. These data support our hypothesis that facial patterns are due to the interaction between cuticular tissue and brain autofluorescence.

#20 Response Choices and Perception of a Moving Sound Source

Mirna Loya; Advisor: **Dr. Michael Russell, Psychology**

Trajectory perception using sound was investigated. The position of the sound source varied and its effect on perceptual accuracy was determined. Forty individuals participated in the study. On each trial, a steel wheel was rolled down an aluminum track. The interaction between the wheel and the ramp served as the auditory stimulus for the present study. A change in the trajectory of the sound was found to affect observer perception. Interestingly, it was revealed that a slight change in the instructions provided to participants resulted in a dramatic change in the reports of observers. The importance of response task and the ability of sighted but blindfolded observers to judge the direction of a moving sound are discussed.

#24 Birth Order and Interpersonal Relationships

Carie Pierpoint; Advisor: **Dr. Michael Russell, Psychology**

Birth order has been suggested as a causal influence on interpersonal relationships and personality since the 1920=s. The present literature review considers not only birth order but also the additional variable of gender and types of characteristics of interpersonal relationships (e.g., discipline, attention, cooperation, and conflict). Most of the research reviewed showed little or no influence of birth order. Only in the levels of cooperation within sibling-child relationships was there a significant relationship with birth order. Other variables have stronger influences on interpersonal behavior than birth order.

#10 Differences in Recall of Emotional Words as a Function of Handedness

Tulora Roeckers; Advisor: **Dr. Joanne Altman, Psychology**

This study examines the differences in recall of emotional (positive and negative) and non-emotional words in relation to visual field, word content and handedness. Findings explore the validity of valence and right hemisphere models for emotion as well as the right hemisphere=s relationship to arousal and attentional processes.

#6 Isolation of Fluorescent Molecules in Drosophila Melanogaster

Rachel Schuette; Advisor: **Dr. Stephen Angel, Chemistry** and **Dr. Tom Wolf, Biology**

Thin layer and column chromatography as well as spectroscopic techniques are used to characterize fluorescent molecules in *Drosophila melanogaster*. Distinctions are observed as a function of sex, age and anatomical source including the head, gonads, digestive tract and exoskeleton regions. In addition, 20-hydroxyecdysone is used as a standard in comparisons with extracts from the fly, with the hypothesis that ecdysteroids are major contributors to the fly=s fluorescence as observed by the Washburn University *Drosophila* Research Group.

#12 Strategies Toward the Economical Synthesis of Cyclen and Cyclam: Methodology for the Alkylation of Cyclic Urea

Joy Spicer; Advisor: **Dr. Shaun Schmidt, Chemistry**

Tethered dimers of cyclen and cyclam are entry inhibitors for human immunodeficiency virus type I (HIV). They have offered a powerful resource in anti-retroviral therapy, creating a need for the cost effective synthesis of the pre-cursor tetraazamacrocycles. The investigated synthetic strategy incorporates the use of cyclic urea as a form of protection of the amines towards over alkylation. Other strategies have incorporated the use of protecting groups to control the reactivity of the substrates, but their choice of using the Richman and Adkins approach adds multiple, moderately yielding steps. Cyclization of two 2-imidazolidone and two 1,2-dibromoethane was attempted to form the bis-cyclic urea analog of cyclen. Due to the formation of side products, a model study was undertaken to investigate the bis-N,N=-alkylation of cyclic urea. Initial use of 1-bromobutane and 2-imidazolidone formed both mono-N-butylated-2-imidazolidone and bis-N,N=-butylated-2-imidazolidone indicating the cyclic urea could be used as a form of protection of amines towards over alkylation. This research was supported by a scholarship grant from the KBRIN program of NIH.

#28 Velocity Judgments of Cars

Dorothy Suter; Advisor: **Dr. Michael Russell, Psychology**

It has long been known that the phrasing of a question can influence an individual=s recollection or perception of an event. However, these studies have involved the perception of events separate from oneself. The present study examined whether the wording or phrasing of a question affects passenger perception of car velocity. Judgments of car velocity were considered with respect to the actual velocity of the car and the wording of the question. It is hoped that the present study will allow us to better understand the perception of witnesses.

#30 Effects of carbonated drinks on blood lactic acid concentrations

Chelle Vale; Advisor: **Drs. Paul and Tracy Wagner, Biology**

Athletes have long discussed the effects drinking carbonated beverages would have on their performance. Anecdotal evidence states that drinking carbonated drinks will have a deleterious effect on athletic performance. Since there is no scientific data available, we decided to test the effects of carbonation on the changes of lactic acid (a measure of physical fitness) in response to exercise. We will examine male subjects' lactic acid levels before and during recovery from exercising to fatigue. Subjects will drink a carbonated (experimental) or non-carbonated (control) drink just before the start of exercise, and the results of these two experimental conditions will be compared.

#2 Creating Encryption Software using Binary

Justin Watts; Advisor: **Dr. Gary Schmidt, Computer Information Science**

Encryption software is not new but developing encryption software can be a tremendous learning experience for the beginning student. This project utilized algorithms that, while not unique, demand a great deal of intuitive logic and creativity. This project will demonstrate successfully converting text to binary encrypted code and decoding the encrypted code back to text.

Oral Presentation Session #1 - Vogel Room

2:00 p.m. – 2:15 p.m.

The Effects of Symmetry and Hair Length on Perceptions of Attractiveness and Age

Tulora Roeckers; Advisor: **Dr. Joanne Altman, Psychology**

This study examined the effects of evolutionary cues (symmetry) versus cultural cues (hair length) on perceptions of attractiveness. Participants rated long- and short-haired, symmetrical and asymmetrical faces. Long-haired women received higher ratings of attractiveness than short-haired women, and symmetry was preferred in short-haired women.

2:20 p.m. – 2:35 p.m.

Fluorescent patterning in the external genitalia of *Drosophila* A comparison between *D. melanogaster*, *D. simulans*, and *D. virilis*

Joy Spicer; Advisor: **Dr. Tom Wolf, Biology**

We have observed that ultra-violet (UV) light exposure in the genital region of the fly produces a strong phototactic response, which includes opening of genital apertures in both males and females. This phototactic response occurs even though the head region is shielded from the UV light. Because the visual receptors in the head region of the fly are not exposed, this leads to the supposition that there are UV photoreceptors in the genital area. A photographic database allowing comparison of the fluorescence patterning in the genitalia of several different geographic populations of *D. melanogaster* has been developed. Data has been incorporated to provide a species ingroup (*D. simulans*) and outgroup (*D. virilis*) evaluation of evolutionary relationships. In addition, photographic studies of *D. melanogaster* virgin versus mated and varying ages have been done. Additional work in our laboratory has demonstrated the presence of naturally occurring fluorescent patterns in the head of *Drosophila*, as well as fluorescence in the abdomen and reproductive tracts. Our hypothesis is that fluorescent patterning influences mate choice and mating behavior.

2:40 p.m. – 2:55 p.m.

Paranormal and Supernatural Experiences: Possible Links to Coping, Locus of Control, and Religious Orientation

Kimberly (Katie) Young-Spencer; Advisor: **Dr. Joanne Altman, Psychology**

Little research has been done on the relationships between an individual's experience of the paranormal/supernatural and other psychological characteristics. The purpose of this study is to determine if a relationship exists among the experience of paranormal/supernatural activities, religiosity, locus of control, and coping styles. This study hypothesized that those individuals who are more likely to experience paranormal/supernatural activity are less religious and have an extrinsic (versus intrinsic) religious orientation, external locus of control, and poor coping styles compared to individuals who experience less paranormal/supernatural activity. Participants were administered the Internal-External Control Scale, Coping With Stress Scale, Religious Orientation Scale, and asked about their personal experiences with the paranormal/supernatural to determine possible correlations. One significant difference was found. Those who had paranormal/supernatural experiences did have a more external locus of control.

Oral Presentation Session #1 - Kansas Room

2:00 p.m. – 2:15 p.m.

Rousseau the Critic

Holly Haake; Advisor: **Dr. David A. Freeman, Political Science**

Jean-Jacques Rousseau was an influential political writer, and the hallmark of his work was his critique of society; which evolved into a doctrine of liberation. His theories embraced concepts of autonomy and democracy, which exemplified his creation of the "General Will". Rousseau's theories are still relevant today; worldwide in different events and political movements."

2:20 p.m. – 2:35 p.m.

The Fool in Twelfth Night: The Wisest of them All

Heather Hooper; Advisor: **Dr. Maureen Godman, English**

In Twelfth Night, Shakespeare elevates the role of the fool to that of a sage. He is given a measure of morality and wisdom above his counterparts in other plays and more notably above the other characters in the play. Here Feste the fool is used as a "comic mediator" who uses his position and his wit to expose the foibles of the principal characters. In this play, Shakespeare proves that the fool is actually the wisest of them all.

2:40 p.m. – 2:55 p.m.

Donne's Conversion: Authentic but Unresolved

Adam Sales; Advisor: **Dr. Maureen Godman, English**

John Donne was born and raised a Catholic during a time when Catholics were under pressure to convert to Anglicanism. Eventually, he did convert, but we may never know which church he believed to be the "true Church." Some view his conversion as politically motivated. Others have suggested that his conversion was authentic, and that after his conversion he never questioned the legitimacy of the Anglican Church. I think Donne's conversion was authentic, but I also believe that even after his ordination he did not completely resolve the question. His Satyre III and Holy Sonnet 18 demonstrate that Donne questioned which church was "true" both before and after his ordination.

Oral Presentation Session #2 - Vogel Room

3:15 p.m. – 3:30 p.m.

The Effects of Overscheduling on Children

Jessica Otto; Advisor: **Dr. Pam MacDonald, Psychology**

Researchers claim extracurricular activities help children with social skills and higher academic achievement. However, many believe overscheduling children has negative effects on stress, anxiety, and sleep. Thirty children from a child care center filled out a surveys. The regression analysis revealed higher scores on somatic scales among children who are overscheduled.

3:35 p.m. – 3:50 p.m.

A Study of Concurrency and Data Corruption in J2EE Web Application

Brian Mulanda; Advisor: **Dr. Bruce Mechtly, CIS**

In a web application, each user session is a separate thread of execution. Multithreaded applications have a potential for corruption of shared data. However, threads can be synchronized to prevent such corruption. We wrote a number of programs to study data corruption and the behavior of threads. Considering both Java Servlets and Java Server Pages, we explored right and wrong ways to synchronize threads in a web application. While we are aware of numerous discussions of concurrency in textbooks, we know of no programs that demonstrate them with web applications.

3:55 p.m. – 4:10 p.m.

Social Effects on Academic Performance in Men and Women

Angela Burrell; Advisor: **Dr. Pam MacDonald, Psychology**

The relationship between loneliness, social support, and academic achievement were investigated. Sex differences were also examined. One hundred twenty-five students completed self-report measures of social support and loneliness. Males were more socially isolated than females.

Oral Presentation Session #2 - Kansas Room

3:15 p.m. – 3:30 p.m.

An Introduction to Edgar Wolfe's Widow Man

Gary Jackson and **Israel Wasserstein**; Advisor: **Dr. Tom Averill, English**

An in-depth exploration/introduction to the themes found in Edgar Wolfe=s novel, Widow Man, and an examination of the time the novel was written and what effect/counter-effect Widow Man produces in response to the time it was written.

3:35 p.m. – 3:50 p.m.

Iconographic Paradigms in Literature

Albert Glassburn; Advisor: **Dr. Mary Sheldon, English**

This research project intends to demonstrate a grasp of icons and their significance. I intend to explore the meaning of icons, how they are made, used, and honored by others. The project also aims to demonstrate how icons have penetrated other mediums of art, most particularly in literature.

3:55 p.m. – 4:10 p.m.

Encounters*

Gary Jackson; Advisor: **Dr. Margy Stewart, English**

In this reading, angels, killers, and superheroes encounter each other and explore the mysteries of human nature.

*Language advisory: Some of the characters in this play use four-letter words and make sexual references.