

Review: 2006 Apeiron

Oral Presentations - Kansas Room

1:25 p.m. - 2:40 p.m.

"Freedoms and Rights"

Samantha Sue Cooper

Mentor: David Freeman, Political Science - Geography

This paper examines both Burke's and Hegel's recommendations of the components required for attainment of a virtuous civil society. How the definition of "reason" is derived according to Hegel, and how this impacts the issues of free will, and freedom of the individual. Also, it explains how according to Burke, in a functioning governmental system man's rights will be both respected and restrained.

Machiavelli and the American Exportation of Democracy

Thaddaeus J. Gassie

Mentor: David Freeman, Political Science - Geography

Today, America sits in the seat of both Machiavelli's prince and his republic in that, of all the entities in what I here call the "global state", she is the one who has the most power and principal influence, and yet is still (supposedly) run by the people. In this position, Machiavelli encourages his prince to maintain his/ her power through the proper use of both force and leniency tempered with the ultimate goal of sticking to what is good for the state in the long run (the republic). The nation of America has done so, and has done so well, but is under scrutiny by her own and other nations' citizens and authorities because of her selfcharged role in propagating democracy in the nation of Iraq. Perhaps seeing fruit in her agenda, America has, in a way, shouldered the responsibility of Machiavelli's ideal state--but how closely does she follow the advice set forward by his writings?

Limitations on Lockean Rights in Property: Would Locke Advocate Another Bill Gates?

Effie J. Cooper

Mentor: David Freeman, Political Science - Geography

While John Locke may be considered a forefather of the capitalist society, he did impose some limitations on the right to own property. This presentation explores the different limitations set forth by Locke, and how they can be applied to our current society.

An Examination of the Legitimacy of Studying Character to Predict Potential Presidential Performance.

Dane W. Anderson

Mentor: David Freeman, Political Science - Geography

James David Barber sparked a new form of political philosophy when in 1972, he published "The Presidential Character: Predicting Performance in the White House." Barber sought to study the past habits and behavioral motivations for action as pertaining to the elected president and presidential hopefuls with the goal of predicting how that individual would perform and behave when in office. Many of his predictions, especially those pertaining to Nixon, were not merely accurate, but shockingly correct. Thus, political philosophers and authors have been seeking to apply Barber's methods to current presidential hopefuls ever since. The purpose of this study is not to discern whether or not Barber's theories were accurate, but rather to determine whether or not these predictions should be used as a tool by the American people when deciding who to elect as the next president of the United States.

Oral Presentations - Vogel Room

2:05 p.m. - 2:40 p.m.

Motivation: A Crucial Link to Literacy Learning

Rachel Alyssa Connett

Mentor: Mentor: Mary Wolfersberger, Education

Students' motivation to engage in literacy learning is positively influenced by the: (a) amount and types of choice offered, and (b) variety of learning activities included. The older and more at-risk the student, the more important these variables become. This study examined the effect of self-selection of book genre and participation in comprehension, writing, and vocabulary activities on sixth grade students' motivation to engage in literacy learning. The intervention covered 15 days with approximately two hours of instruction daily. All students read a self-selected novel and participated in all of the literacy activities on multiple occasions. Data was collected by administering surveys prior to and after the intervention to determine: (a) students' satisfaction ratings for a novel selected from a list of novels described by genre and a brief summary, and (b) students' perceptions of literacy activities focusing on comprehension, writing, and vocabulary. Findings indicate that a significant number of students were satisfied with the novel that they selected and read. The results were mixed when students' interest in specific literacy activities were analyzed; however when analyzed as a whole, a significant number of students enjoyed participating in the activities. The results of this study imply that classroom teachers should consider choice and variety as crucial variables when planning literacy instruction that will motivate older students.

Can Accelerated Reading Tests Determine Reading Comprehension?

Yvonne Hamilton

Mentor: Mentor: Mary Wolfersberger, Education

A study of pre and post accelerated reading tests on twenty-four sixth grade students. Students underwent a series of reading comprehension strategies while studying a novel and took paper tests to determine comprehension. Accelerated reading tests were administered at the conclusion of the novel and the results showed the students had very low comprehension of the novel although tests taken throughout the novel resulted in higher scores. Clearly the importance of literal and non-literal testing questions must be addressed when using accelerated reading tests.

Oral Presentations - Lincoln Room

1:25 p.m. - 2:40 p.m.

Consumer Credit Scoring: What Consumers Don't Know Can Cost Them Thousands

Coye Crenshaw-Kleve

Mentor: Gary Baker, School of Business

This presentation is based on a paper written for the School of Business as part of an Honors program. The paper discusses credit reporting and credit scoring, the purpose they serve for financial institutions, and the effects a person's credit score has on his/her borrowing ability. The paper also discusses what consumers can do to raise their credit score, as well as what habits affect credit reports and credit scores.

Becoming a Wholesaler-Distributor

Soon Chung

Mentor: Rob Hull, School of Business

General information on how to become a wholesaler. My research will include budget to start a business, marketing tools, items available for wholesale and how to connect with supplier. I will also include my personal simplified business plan for this business.

City and County Consolidation: How it affects the region's economic well-being.

Yuliya Alexeeva

Mentor: Steve Cann, Political Science - Geography

This study is an analysis of the phenomena of city and county consolidation and its impact on the economic well-being of the region, in which the consolidation takes place. The study attempts to answer the question of whether consolidation leads to an increase in the median household income, the chosen measure of the region's economic well-being. The study looked at 20 cases of city and county consolidation attempts, which took place between 1969 and 1979. It compared the 1969 and 1979 (before and after the consolidation attempt) median household incomes of the counties and found that the median household incomes increased after the consolidation, in some cases by statistically significant amounts.

Desperate Housewives to Desperate Leaders: A Look in to Women's Community Transformations through Societal Change and Leadership

Lacey Keller

Mentor: Margaret Hawthorne, Gary Forbach, Leadership Institute

As stated in the sub-theme description, "community leadership often tackles larger societal issues, seeing the community as a stepping-stone to a better society." What if this was reversed and, instead, women are using society and culture as their stepping-stone to become better leaders? Women in leadership roles may often adopt inappropriate leadership styles because their culture may incorrectly depict real leadership. They may adopt a detrimental leadership style because they feel that it may lead to their advancement and success, but the effects are of the contrary. Using the assertion that leadership is learned rather than bred, culture could be thought to be the origin for such misinterpretations of leadership. Various differences that may lead to these misinterpretations of leadership may include, but are not limited to, race, ethnicity, socioeconomic status, age, and environment. Additionally, as the

world becomes more globalized through technology, the economy, and the environment, we must ask ourselves, will a woman's leadership skills adapt once again to fit a global culture?

Oral Presentations - W Room

1:25 p.m. - 2:40 p.m.

The Mainstream at its Margins: A Visual Study of the 'Not In Our Honor' Rally.

Eric S. Sheets

Mentor: John Paul, Sociology - Anthropology

The prevalence of Native American mascots in the sports and sports media works to increase the invisibility of Native Americans in the perceptions of non-Native Americans. This paper uses original images of Native American anti-mascot demonstrators and football spectators at a football match between the Kansas City Chiefs and Washington Redskins, and from the images analyzes their interaction in search of meaning of the Indian mascot according to both sides. In addition to photography, 15 brief elicitation interviews have been conducted with sports fans on their attitudes and perceptions of the antimascot demonstration. I find that the attitudes and perceptions are almost identical with popular attitudes and perceptions on the issue. An important aspect of the Native mascot issue is the "invisibility factor" affecting Native Americans that is at once created and maintained by the use of such false representations as Indian mascots.

Political culture and Public High School Dropout Rates.

Elizabeth Oliver

Mentor: Loran Smith, Political Science - Geography

While a high school diploma is often perceived as the bare minimum for children to succeed in later life, there is some question as to whether there is a relationship between a state's political culture, as developed by Daniel Elazar, to determine whether there is a relationship between a state's political culture and its high school dropout rate. The hypothesis of this paper is that states with a traditionalistic cultures will have a higher high school dropout rate than states with moralistic or individualistic political cultures.

Health Insurance - Time Will Tell

Fai Ng

Mentor: Mike Mosier, Mathematics & Statistics

The health care system in the United States has a lot to be proud of. Some believe that it is the best care system in the world, and it may very well be. But for those who cannot afford health insurance, access to the health care system is limited. These people will likely go untreated, undertreated, or simply suffer and die. The Kansas HealthWave program, KHW, is a low cost insurance plan for low-income families. The Kansas Health Institute is conducting an evaluation of the KHW in KS. One of its tasks is to analyze enrollment numbers for the program, and to estimate future enrollment for planning and budgeting. In this paper, we demonstrate how statistical time series analysis methods can be applied to the monthly enrollment data. A time series model is fitted to the data, and predicted enrollment numbers for 2005 are presented.

Human Trafficking in the Midwest: Experience and Perception Among Kansas Law Enforcement Officers -- An Exploratory Study

Vicky L. Luttrell

Mentor: John Paul, Sociology - Anthropology

Within the law enforcement community, the first to encounter activities of human trafficking are most likely local police agents. Local agents are, however, less likely to be on alert for said activities or to view such situations as their problem. Indeed, U.S. law enforcement is largely unaware of or poorly informed about the nature of forced labor and the plight of its victims. So stated, the goal of this work is the examination of the attitudes and training strategies of local police officers with regard to human trafficking activities. Specifically, we investigate the degree to which local police departments in Kansas have participated in human trafficking investigations as well as the attitudes and training relating to these investigations.

Oral Presentations - Shawnee Room

1:25 p.m. - 2:40 p.m.

From Recorder to Flute: The Development and use of the Recorder and Flute from the Renaissance to Present

Erica L. Seago

Mentor: Jessie Fillerup, Music

The first evidence of recorder use can be seen as early as the fourteenth century in Guillaume Machaut's *La Prise d'Alexandrie* and *Remede de Fortune*. In these treatises he created a list of different kinds of recorder like instruments, often referred to as duct flutes or fipple flutes. Other evidence to suggest recorder use can be seen in iconographic or literary sources. Many paintings from the fifteenth century show couples playing recorder like instruments outdoors or angels in heaven playing harps, lutes, and recorders. The function of the recorder in the Renaissance began as a courtly instrument to be played at special occasions and developed into an instrument that was played by both upper and middle class citizens for recreational purposes. The repertoire for the recorder began as improvised dances and grew to include vocal music such as mass parts, motets, madrigals, and other forms of secular music. Following the Renaissance era the recorder faded into the background as the transverse flute gained popularity and surpassed the recorder because of its increased range, flexibility in dynamic contrast, and capability for different tone colors. The transverse flute developed further into what is known simply as the flute. The repertoire for this instrument developed along side the instrument creating different accompaniments, styles, forms, and techniques. These changes can best be seen by looking at the different styles of composition for the flute as seen in the Baroque, Classical, Romantic, and Modern eras.

Virginia Protestants Support the Separation of Church and State

Carrie A. Davidson

Mentor: Alan Bearman, History

Jefferson became the third President of the United States in 1800, but not without the help of Baptists and Presbyterians in Virginia. The argument seems preposterous that Baptists and Presbyterians in Virginia would support Jefferson, the deist, rather than Burr, an icon of Christianity in America, in a Presidential election. It is my argument that Baptists and Presbyterians in Virginia supported Jefferson rather than Burr because they wanted religious liberty, attainable through the separation of church and state.

Allowed to Speak, Difficult to Ignore: Methodist Women shaping the Religious and Political Identity of Kansas through the Temperance Movement

Cara Lea Burnidge

Mentor: Alan Bearman, History

Historian Gary Entz in his recent article "Religion in Kansas" explored the rich history of religion in Kansas. Entz noted the nuances within the religious atmosphere of Kansas from the nineteenth century into the modern era. Nevertheless, there remains a significant absence of discussion about the role of women in Kansas religious history. Entz recognized, at times, that women have played a role in Kansas religion. However, he does not, for example, truly identify the crucial role of Methodist women in the Temperance Movement. My essay seeks to fill this void in the historiography by more closely analyzing the vital role of Methodist women in shaping the political and religious scene in Kansas.

Artful and Symbolic Depictions of "Black Jesus:" Uses, Meanings, and Controversies

Charlotte M. Hansen

Mentor: John Paul, Sociology - Anthropology

Perhaps no religious figure has been more often depicted in art than Jesus. Indeed, artists have been free to interpret him through the prism of their own beliefs, values, and cultures. In this however, there are no undisputed images of Jesus nor any lack of controversy regarding his appearance. So stated, this work examines, the history, symbolic uses, meanings, and controversies associated with the depiction of a Black Jesus.

Oral Presentations - Cottonwood Room

1:25 p.m. - 2:40 p.m.

Effects of Bases, Aldehyde Structures, and Water in Solid-State Wittig Reactions

Kevin P. Kent

Mentor: Stephen A. Angel, Chemistry

Traditionally, the Wittig reaction requires the use of a strong base in an organic solvent for the synthesis of alkenes from ketones and aldehydes. Following a recent report of solid-state Wittig reactions, using a ballmilling technique, parameters affecting solid state yields are reported, using alternate milling techniques. Trends of alkali- and alkaline-earth carbonates and phosphates were studied. Some effects of water on the reaction were observed. The effects of melting points and reactivities of aldehydes were also studied.

Using Genetic Algorithms to Generate Optimal Strategies for Schrimmin

Neal Fultz

Mentor: Cecil Schmidt, Computer Information Sciences

Schrimmin, a German drinking game, resembles a poker/blackjack hybrid, and is characterized as deterministic, strategic, and partially observable. Because it is not fully observable, an optimal strategy would rely heavily on dynamic epistemic logic. This strategy quickly becomes too complicated to derive via proof. Using a genetic algorithm, we can find increasingly optimal strategies by using a performance-based fitness function and generating successor strategies sexually. We implemented such a solution.

A Computational Investigation of the trans-Influence in 2,2'-Bipyridal Cobalt(III) Complexes

Aaron M. Keller

Mentor: Shaun E. Schmidt, Chemistry

The trans-influence in bis(bipy) cobalt(III) complexes, where bipy is 2,2'-bipyridal, gives rise to ambiguity in interpreting Proton Nuclear Magnetic Resonance (¹H-NMR) signals. Computational models are compared to experimental data to assist making assignments in the NMR spectra for a series of bipy cobalt(III) complexes. Initial assignments for six of eight ¹H-NMR signals for bis(bipy)carbonato cobalt(III) and bis(bipy)oxalato cobalt(III) in acetone-d₆ were determined using the gas phase B3LYP method, with a variety of basis sets. The electronic properties of the complexes will be explored at the B3LYP/6-31+G(d,p) level to explain the NMR spectra. Due to the effects of solvent on the ¹H-NMR spectra, observed experimentally, better models should be obtained by incorporating solvent effects in the NMR computations.

Oral Presentations - Boswell Room

1:25 p.m. - 2:40 p.m.

Rattlesnake tongue-flick kinematics in response to differential odor sources

Caitlin A. McGhee

Mentor: Bruce A. Young, Biology

The chemosensory system of snakes is largely mediated by the activities of the tongue. The kinematic movements of the tongue, termed the tongue-flick, differ depending on such factors as the type, or behavioral context, of the odor source. Previous studies have concentrated on the ability of rattlesnakes to locate a prey item that has been envenomated and released. Recent work has shown that in addition to following the trail of a struck mouse, rattlesnakes can locate potential prey items using either groundborne or airborne scent trails. This study was undertaken to determine whether Northern Pacific rattlesnakes (*Crotalus viridis oreganus*) exhibited different tongue-flick kinematics when following groundborne or airborne scent trails. We presented identical odorant sources as either airborne or groundborne scent trails and quantified, using standard and high-speed digital video and NIH Image, the rattlesnakes' responses to these scent trails.

Terrestrial locomotion and locomotor gaits in the yellow anaconda

Virginia K. Barnes

Mentor: Bruce A. Young, Biology

Gaits, regular footfall patterns during locomotion, have been extensively studied in tetrapods. In these animals there is a regular transition in gaits (i.e., walk, trot, gallop) with increasing velocity. Far less is known about the gaits in non-tetrapodal vertebrates including snakes. Previous analyses of snake locomotion have centered on substrate-specific locomotor mechanics such as sidewinding. Our analyses involved juvenile yellow anacondas (*Eunectes notaeus*) locomoting over large indoor trackways with identical substrates. The locomotor kinematics were captured using standard, and high-speed digital, video cameras, then streamed to a computer for quantification using N.I.H. Image. We documented several distinctive forms of locomotion, each with discrete velocity ranges. The presence of these distinctive locomotor modes, and the transitions from one to another with increasing velocity, strongly suggest that snakes have "gaits" analogous to the locomotor systems of tetrapods.

A Survey of Collegiate Cheating: Students' Definitions and Motives

Jordan Toot

Mentor: John Paul, Sociology - Anthropology

Abstract: This study examines self-reported acts of academic dishonesty on a small Midwestern college campus. In specific, we examine: (1) student definitions, (2) and student motives of cheating along with (3) student expectations of disciplinary actions to be taken regarding the institutional discovery of student cheating.

Initial Public Offering - The IPO Process

Ty Preston Walrod

Mentor: Rob Hull, School of Business

This project will outline the initial public offering (IPO) process from consideration to completion, including prerequisites for an IPO, the process of securing an investment bank, going public, and the postoffering response of the issuing company.

Performances - Carole Chapel

2:15 p.m. - 2:40 p.m.

Songs From Wilhelm Meister's Apprenticeship: Incomparable Sorrow and the Embrace of Death.

Matthew M Scrivner

Mentor: Gabriela Lunte, Modern Languages

In his novel Wilhelm Meister's Apprenticeship, Goethe explores feelings of alienation and pining for death in the character of the Harper. These songs are later explored musically by Viennese composer Franz Schubert who writes his Gesaenge des Harfers trio of songs from Goethe's texts. This presentation will explore both text and song in a lecture-recital format.

Poster Session - Washburn Room A

2:45 p.m. - 3:55 p.m.

#1 Voting Behavior and Gender

Bethanee J. Boeh

Mentor: Steve Cann, Political Science - Geography

This study examines whether gender plays a significant role in voting behavior. My interest in this area of study resulted while campaigning for my father for political office while he was running against a female candidate. While my

father was successful in his election, there were a number of people who expressed that they planned on voting for his female opponent based solely on her gender. Through use of a survey, one hundred and fifty people were randomly selected to participate in a political study that analyzed a theoretical election of two political candidates of opposite genders. The survey provided a picture of each candidate as well as their educational and political backgrounds, which were made similar to minimize experience and to maximize gender. After voting for the political candidate of their choice, the participants were asked to give information about themselves, including why they voted for the candidate that they selected. While gender plays a minor role in voting behavior, results show that people who have attained higher education levels are more likely to vote for the female candidate. Also, while the experience of the candidates proved to be the primary factor for candidate selection, participants aged 65 and older tended to vote on the basis of gender.

2 The Ceramic Linage: American Women Potters 1900-1950

Monette Mark

Mentor: Reinhild Janzen, Art

American ceramics has changed greatly over the years as new ideas, fashions and processes are developed. The roles of women have been noted in biographies, company histories and historical overviews but there has been little attempt to show the depth of their impact on American pottery and the inter-relationships between these women who taught, learned and influenced each other and new generations of ceramic artists. In the early 1900's, America was the country where a variety of styles were being developed in conjunction with the influences of other ceramic traditions, most notably the English Arts and Crafts Movement, Japanese styles, French, Bauhaus, Scandinavian modernism and British studio pottery. Knowledge about the lineage or legacy of women ceramic artists and the intertwined history of early American women potters is important in understanding how, why and what potters are doing today.

3 An In-depth Analysis of Delta/Gamma Neutral Spreads

Daniel P. McNulty

Mentor: Rob Weigand, School of Business

In this project we start off by going over some basics of option price measurement. Then we will discuss the basics of a delta/gamma neutral spread, by giving the reader an example and showing them how to completely hedge price risk. By showing the reader how to properly hedge the delta and the gamma of an options position, we can neutralize immediate price risk while relying on other measures of risk to provide us with a profit. We will also include a few real world examples and how they did, and did not, work out in real time market conditions, along with why they did or did not work out.

4 Estilo Business Plan

Gabriel Munoz

Mentor: Rob Hull, School of Business

It is a business plan.

5 Interpretations and Controversies of Religious Based Art

Charlotte M Hansen

Mentor: John Paul, Sociology - Anthropology

In this work, we explore individual's interpretations of controversial religious based art. Our analysis is based on a survey which asks questions based on the three following premises: 1. An individual's interpretation is central to controversy. 2. How one judges a work will likely affect how one describes it (e.g. one's cultural biases will influence

what they choose to see). 3. All works of art are candidates for controversy.

6 The Geometry of 3D Sidewalk Art

Yue Yang

Mentor: Bruce Mechtly, Computer Information Sciences

This project was inspired by the 3D sidewalk chalk art of Julian Beever. We developed a Java program to convert a 3D object model into a 2D projection. When the projection is drawn on a sidewalk in chalk, it will appear as a 3D image when viewed from a particular location. We will present images of Julian Beever's art work, show our projections of various model files, and show how the projection is done.

7 AgRoots.com Profitable Promotion

Paul Arterburn

Mentor: Rob Hull, School of Business

Agroots.com was launched spring of 2005 as a news and community website centered around the rural lifestyle. Google and Yahoo simultaneously dropped AgRoots from their search algorithms in the past months and the visitors to the website dropped significantly, but not before we could gather statistics on the thousands of people who had visited. With this project we hope to examine the current statistical information we obtained and revamp the website to produce higher profit margins. This can be done by redesigning advertising placement. While redesigning the ad placement we can gather statistical data taken as users visit the site. After successfully redesign, we can calculate a ratio that will show the average dollar created by each user visit. From that we can purchase advertising from other sources that is below that ratio, thus producing a near arbitrage situation. Example: if our \$/visit ratio is .25 per visit, we could seek advertising that costs us .20/visit, thus producing on average, \$.05 per user. For this profitable promotion there are two main objectives: ? Redesign format to increase ad clicks per visitor (\$/visit) ? Seek and purchase promotions that are at or slightly below the \$/visit ratio with the redesigned format Benefits: ? Increased promotion of AgRoots.com ? Profitable promotion ? if effective \$/visit ratio is attained ? Intangible: Goodwill ? Returning visitors will help to grow the community aspect that fuels the site Stakeholders are the owners of AgRoots.com, as the project has potential to increase bottom line significantly while fueling the growth of AgRoots at the same time. Users of the website will also benefit as the community grows and user interaction proliferates. Risks: ? Developing a poor website structure ? Adding more advertising in the websites "hotspots";¥ will create a less user friendly format may leave current and future users unsatisfied with the community, and further decrease visits. ? Unprofitability ? At current rate of promotions spending AgRoots is marginally profitable and producing low revenues. Increasing that spending could deem unprofitable. ? Finding advertising below our \$/visit ratio may be impossible.

8 Blazing Gunner

Scott M. Lollman

Mentor: Rick Barker, Computer Information Sciences

I will present a video game programmed utilizing a game-engine developed in the computer game programming class, CM390 this semester. This game will be a 2d scrolling shooter where the player pilots a fighter craft in a style similar to R-Type. The intent is for the player's abilities to improve based on play style, and the player's in game appearance will adjust to match. The player will be faced with hoards of "stupid" enemies that they will be able to shoot down. Many will fly based on a pattern, and some will shoot back at the player. At the end of the level there will be a larger, "smarter" and more durable boss ship that the player must beat in order to win the level/game. I will include a title screen and end of game screen with a total score. Enhancements that will be added if there is time will be: a table of high scores, multiple levels, and/or multiple ship choices.

9 Sail-S2.org

Joshua Phelps-Roper, Brent R. Otto, Florence Cheruiyot

Mentor: Cecil Schmidt, Computer Information Sciences

Organizations today often maintain relationships with their member through interactive websites. These websites typically contain a basic home page with links to functions such as website registration and profile maintenance, forums, and site related postings. Typically these websites are often implemented without regard to long term maintenance. As the organization grows, there is often a need to incorporate additional functionality to the website as well as applying an engineered approach to the website's organization. We investigated such a website documenting the required process and procedures that would work best for the organization. Additionally we look to new technologies that will provide members of the organization improved usability and functionality. These technologies include the use of Google Maps, a web map server, to help visually locate other website members and the implementation of a relational database to incorporate user profile information allowing for future data mining applications.

12 Survivors of Suicide: A Qualitative Analysis of Suicide Memorial Websites

Carol F. Luttjohann

Mentor: Jay Memmott, Social Work

Every seventeen minutes someone dies by suicide. Every eighteen minutes someone is left to make sense of it. Each year in the United States over 30,000 people die by suicide leaving over 250,000 survivors behind to grieve the loss and try to understand. This qualitative research project utilized grounded theory methodology to analyze over 200 Websites created by survivors of suicide to generate social work theory for practice and education.

13 Isolation and Characterization of Thermotolerant Amoebflagellates from Freshwater Sources in Northeastern Kansas

Casey L. McNeil

Mentor: John C. Mullican, Biology

Amoebflagellates of the genus *Naegleria* are ubiquitous, unicellular organisms, one of which is a known human pathogen, *Naegleria fowleri*. *N. fowleri* is the causative agent of primary amoebic meningoencephalitis, a rapidly fatal disease of the central nervous system. Species of the *Naegleria* genus have been found on every continent, though never in Kansas. Non-pathogenic *Naegleria* spp. lack thermotolerance. This study seeks to identify *N. fowleri* from water sources in northeastern Kansas in an attempt to discover the potential for human infection. Water samples collected from various locations throughout northeastern Kansas were taken to the lab for classical and genetic analyses. Samples were centrifuged and placed on NM agar plates covered with a lawn of UV-killed *E. aerogenes* and incubated for 24 hours at 37°C. Samples scraped from the advancing front of the amoeboid plaque were analyzed via PCR using *N. fowleri* specific primers. This study reports the first identification of thermotolerant amoebflagellates from freshwater sources in Kansas. Initial genetic characterization has not been consistent with *Naegleria fowleri* and further isolation and characterization of the environmental isolates is ongoing.

14 The Effect of Having Siblings on Peer Relationships

Erin R. Menhusen

Mentor: Joanne Altman, Psychology

This study looked at the dependency on peer relationships for "only" children vs. children with siblings. Participants were assessed on relationships with peers, teachers, and parents. The results will be discussed in terms of differential adult relationships as a function of not having siblings.

15 The Effects of Long Term Hypoxic Exposure on Naeglaria gruberi

Kyle Stueven

Mentor: Tracy Wagner, Biology

Naeglaria gruberi is a free-living amoeba that lives in various aquatic and terrestrial environments. It has a life cycle that allows it to change between three different forms: amoeba, cyst, and flagellate. It has been shown that lack of nutrients will trigger Naeglaria toward the flagellate form. This research project is designed to study the effects of long term hypoxic (low oxygen) conditions on the morphological state of Naeglaria. Previous research in this lab has shown that short term hypoxic exposure did not trigger a change to the flagellar form however, it did appear to increase the number of cysts. It is our hypothesis that long term exposure will cause an increase in the number of cysts observed in the population. This hypothesis is based on the fact that the cyst form allows the Naeglaria to survive adverse conditions. If cysts do form then the next step would be to attempt to cause a recovery to the amoeboid form.

16 Research of Technology Based Exam Questionnaire Survey

Marcia L. Morgan

Mentor: Dave Depue, Office, Legal, & Technology

My research project involved conducting an exam questionnaire surveying college students and instructors on their preference of testing methods, the differences between instructor's utilization of technology of electronic grading system and traditional testing, the differences between the technology of online testing and campus testing. It will show the difference between traditional and nontraditional students and their study habits and preferences.

17 Characterization of Telomerase PCR Products Amplified From Naeglaria Via Degenerate PCR

Michelle L. Wishon, Becky J. Seadeek

Mentor: John Mullican, Biology

Amoeboflagellates of the genus Naeglaria are free-living, unicellular eukaryotic organisms. Most eukaryotic cells contain telomerase; a ribonucleoprotein complex that re-lengthens shortened telomeres during DNA replication prior to cellular division. This telomere "repair" mechanism prevents degradation of chromosome ends by adding repetitive oligomeric sequences to the telomeres of each linear chromosome. If repair does not occur, chromosomes continually shorten each replication cycle, ultimately leading to death of the cell. We hypothesize that telomerase is the enzyme present to maintain telomere length during Naeglaria DNA replication, rather than using a telomerase-independent mechanism. PCR using degenerate oligonucleotide primers was performed at different annealing temperatures. Resulting PCR products were resolved via agarose gel electrophoresis and either gel-purified or used directly for cloning. Cloned PCR fragments will be DNA sequenced and analyzed to determine if the sequences are derived from a known telomerase gene. If present, we conclude Naeglaria most likely uses telomerase maintenance during replication.

19 Age Related Changes In Fitness With Marathon Training

Katie J. Gerant, Adam J. Weaver

Mentor: Tracy Wagner, Biology

The goal of our research is to determine if age has an affect on one's ability to improve their level of fitness. Our hypothesis is that the younger the person, the faster and/or greater changes there will be in level of fitness. Our subjects participated in regular physical exercise: marathon training classes at Washburn University. Dr. Tracy Wagner, Adam Weaver, and Katie Gerant collected data from three different age groups 18-24 year olds, 35-45 year olds, and 50+ year olds. The variables we measured included each participant's pulse or heat rate taken after running

one mile, and at a later date after running 5 Kilometers. We also measured the variables: resting pulse or heart rate and resting blood pressure to determine differences in pressure and resistance because they determine how well blood is able to flow through the body which is an indicator of health. The resting pulse rate should decrease as the semester progresses. This is because the training will cause the heart muscles to strengthen, leading to stronger contractions of the heart and an increased volume of blood being pumped into the body with each beat (stroke volume). This can be shown by the formula for Cardiac Output: $CO = \text{stroke volume} \times \text{heart rate}$. Therefore the heart will not have to beat as many times to get the same amount of blood out. Another measure of fitness is Max VO₂ because it measures the maximum volume of oxygen in mL that a person can use in one minute. In other words the blood is able to get more oxygen to the cells. This value will be calculated from a timed 1 mile, 3 mile, and 10 mile run, each occurring at different times in the semester. We expect to see an increase in the VO₂ Max as the semester passes, which would show an overall improvement in fitness. We also expect to see an overall decrease in the Mean Arterial Pressure which is equal to Diastolic Pressure + 1/3 (Systolic Pressure-Diastolic Pressure). MAP is another indicator of health. Our data should show that with increases in exercise there is a decrease in blood pressure. We expect these changes in fitness with regular running, and that they will happen much more quickly in the youngest age group.

21 Effect of Dead Space on Blood Lactate Levels

Jerad J. Meyer, Micah Hall

Mentor: Paul Wagner, Biology

Intense levels of exercise produce changes in the lactate levels of the blood. These levels can be altered by changes in the acid-base status of the body. We have been looking at the effects of carbon dioxide on blood lactate levels in exercising humans. In this study, we will use changes in dead space to alter the concentration of carbon dioxide in the blood. A computer simulation model suggests that increases in dead space will cause blood lactate levels to rise quicker. We tested this hypothesis that blood lactate levels would rise quicker with an increase in dead space by exercising college-age males with a cycle ergometer under normal dead space conditions and increased dead space. We found that the increase in blood lactate levels were actually delayed with an increase in dead space. Our data is consistent with the lactate shuttle concept and suggests that the algorithm of the computer simulator should be altered.

23 Types and diversity of algae present in surface waters of the Black Hills, South Dakota

Tracey L. Brown

Mentor: Vic Landrum, Biology

Algae are an important part of an aquatic ecosystem and contribute in many ways, such as oxygen production and carbon dioxide use. The diversity of algae is a determinant of the quality of aquatic life within the ecosystem and is what was observed in the Black Hills and Badlands of South Dakota. Twelve sites scattered through this area were sampled using a syringe filter to isolate the algae. Results show a diversity of algae, ranging from green algae (Phylum Chlorophyta) to diatoms (Phylum Chrysophyta) and dinoflagellates (Phylum Dinophyta). No pollution-indicator algae were noted, implying a optimal water quality for the sites sampled.

24 Oxidation of Pyrrole Alpha-methyl to Aldehyde and Acetoxymethyl Groups

Ami A. Rughani

Mentor: Sam Leung, Chemistry

Pyrroles are compounds used in the synthesis of porphyrins, which are the core structures in biological molecules such as heme and chlorophyll. Studies in pyrrole chemistry are important since the substituents on pyrroles often need to be modified for use in porphyrin synthesis. In this research project, alternatives to the existing methods for oxidizing the alpha-methyl group of a pyrrole to an aldehyde or an acetoxymethyl group were sought. Various oxidizing agents (for example DDQ) were used in these studies, some yielding reasonable success. This methodology was also tried successfully in the oxidation of dipyrromethanes to dipyrrolyketones.

25 Synthesis of the Free Tetraazamacrotricyclic, [4⁶]Adamanzane: A Host Ligand for Encapsulation of a Guest Metal Part 2: Synthesis of the Tetraazamacrobicyclic, [4⁵]Adamanzane: Ligand With a Bowl-like Topography

Patrick R. Porubsky

Mentor: Shaun E. Schmidt, Chemistry

The ultimate goal of this research is the synthesis of the [4⁶]adamane cage compound. This cage compound is desired so that its coordination properties and possible medical applications can be studied. In this second phase of its synthesis, progress towards the [4⁵]adamanzane are being made. It is being constructed using a variety of approaches including a modified Richman-Atkins approach, high dilution methods, and olifen metathesis. FT-IR, and NMR are used in the identification of the molecules isolated.

26 College Students' Attitudes on Mental Illness

Jennifer D. Cavin

Mentor: Mike Russell, Psychology

Existing literature has shown society to be prominent in influencing individuals' attitudes towards mental illness. In addition to society, studies have also shown the knowledge we obtain through education can also affect individuals' attitudes toward mental illness. Therefore, The present study examines college students' attitudes toward mental illness and how those attitudes differ within the major and minor divisions. College students' attitudes were assessed through a demographic survey and the Opinions on Mental Illness (OMI) scale. The findings of this study will address the effects of college major choice and exposure to mental illness on perception of mental illness.

27 Supplemental Prenatal Education Opportunities for Pregnant Adolescents

Justine Noelle Bowlin

Mentor: Debbie Isaacson, School of Nursing

Statistically, pregnant adolescents have the highest rates of preterm births and infant mortality. Often this is attributed to the absence of early prenatal education. Pregnant adolescents frequently seek prenatal healthcare and education late into their pregnancies as a result of fear and limited accessibility. A newly formed pregnant adolescent support group at a local high school expressed a need for nursing education in their group's current curriculum. The intent of this project was to contribute to the existing curriculum of the support group. This group was supplemented with nursing education in the areas of prenatal nutrition, substance abuse during pregnancy, and anticipatory education on the process of childbirth. Methods of presentation were powerpoint presentation, diagrams, supplemental handouts, and a board game to incorporate all of the presented material.

28 The Distributed Drawing Board, a Network Connected Drawing Application

Matt Mergen

Mentor: Bruce Mechtly, Computer Information Sciences

In the growing age of technology, users desire network connectivity. In this project we created a Java application that enables a group of networked users to interact with a shared drawing surface. Through a user friendly graphic user interface, users are able to easily start a server through a specific port of their choice. Other users wanting to connect to that server simply must know the server IP address, and the port number on which the server application is running. The single application possesses the ability to both run the server, and act as a client to a server; therefore, reducing the need for multiple programs or dedicated servers. For efficient execution of the application, we implemented multi-threading techniques, allowing for simultaneous code execution. To further enhance user interaction, we created

a Pocket PC version of the application. This Pocket PC version allows users to connect wirelessly through a handheld device and enjoy all the benefits of the networked application.

29 Computer-Aided Harmonic Analysis of MIDI Files

Darin Stelting

Mentor: Bruce Mechtly, Computer Information Sciences

We wrote a Java program to facilitate harmonic analysis of simple compositions in the Classical style. The program performs the following functions: (1) read and parse a MIDI file, extracting the note on and note off events; (2) store the notes in an internal data structure; (3) graphically represent the composition, allowing the user to scroll through the composition; (4) display a histogram of the total pitch content of the composition; (5) analyze the pitch content and attempt to determine the key of the composition; (6) construct the harmonic progression of the composition and store it in a data structure. The value of the program is that it gives us an environment to explore our ideas regarding the harmonic structure of tonal music. We will demonstrate our program and present our results in the form of harmonic analysis of a number of classical compositions in MIDI format.

30 Developing a Departmental Assessment Website

Neal Fultz, Jacob Frantz, Clayton Peters

Mentor: Cecil Schmidt, Donna Lalonde, Computer Information Sciences

Periodically, departments within the University conduct internal assessments and report their findings to the Vice President of Academic Affairs. Typically these reports are not standardized between departments nor are they standardized from year to year. This lack of standardization inhibits meaningful comparisons. We address this problem by creating a standardized website to collect and summarize this data. We migrated from a previously developed prototype of this website to a fully functional system. This system provides the functionality required to address the standardization problem as well as additional features.

33 A Case Study of Colgate Palmolive and a subsidiary, Hill's Pet Nutrition, Inc.

Jacob S. Prewett

Mentor: Janice Schrum, School of Business

The purpose of this case study is to research the reasons for the exemplar success of the Colgate Palmolive Company. The focus is Colgate's organizational culture, leadership values, leadership ethics, leadership strategy, and the significant impact Colgate has made on its many communities. The key goal of this study is to primarily expose the leadership strategies responsible for the distinctive performance of Colgate Palmolive during the last two decades. Due to the fact that Colgate's recent growth has occurred primarily under the leadership of Mr. Reuben Mark, Chief Executive Officer and Chairman of the Board, he will be the key executive leader analyzed.

34 Colored Backgrounds: The Effects of Color on Memory for Word Pairs

Jodi L. Coffman

Mentor: Joanne Altman, Psychology

This study investigated the effects of imagery content and color congruency on memory. Participants completed a paired-associate task (using low and high imagery words) under color-congruent, colorincongruent, or no-color conditions. Although there was an effect for imagery, there was no effect for color, which is surprising in this computer age.

35 Relationship between the average Public High School Graduation Rates and Average Per Student Total Spending

Rachel Marie Will

Mentor: Steve Cann, Political Science - Geography

Public school funding has been and continues to be a heated topic in Kansas. The Kansas legislature continues to debate ways to respond to the Kansas Supreme Court ruling, which stated that the current amount of funding given to each school was unconstitutional. With the latest proposal suggesting that Kansas should spend 660 million dollars to solve the problem, researching for a correlation between school funding and graduation rates seemed necessary. The 660 million dollar figure is causing some problems such as where this money will come from. In this case, both the Republicans and Democrats do not have a clear solution. In this study, I analyzed the average graduation rates for each of the states by the average expenditure per student. All of my data was gathered from 2002; the most recent year I could obtain information. The purpose of the research was to see if school funding provided by the government affects the rate of graduation. I collected data on 49 states and ran the proper statistical tests. In the end, I found a correlation between the total average expenditure per student and graduation rates. In other words, how much the government allocates to schools can influence the rate of graduation.

36 Exposing Light Pollution

Janet Arlene VanDonge

Mentor: Steve Black, Physics - Astronomy - Geology - Engineering

Light pollution is simply "Any adverse effect of artificial light including sky glow, glare, light trespass, light clutter, decreased visibility at night and energy waste" (International Dark-sky Association). This type of pollution is becoming an ever increasing problem as our cities grow larger and the regions where there is dark sky grow smaller. Light pollution is constantly interfering with research and overall enjoyment of the night sky. As an astronomy student at Washburn University and someone who has a passion for astronomy I have become aware of the light pollution problem in Topeka, Kansas I am currently enrolled in an intermediate astrophotography class. Light pollution can greatly affect the results of the photographs I take for this class. The film becomes saturated with light more quickly from the Crane Observatory surrounded by all the artificial lighting than it would if I were in an area that is not as affected by light pollution. To show this I will do a comparison of photographs taken from Crane Observatory to photographs taken from a location on the Potawatomi Reservation. To form this comparison I will be using a 35mm Nikon FM camera atop a tripod with a 500mm camera lens. I will use the same range of shutter speed for each object that I photograph and I will use only Fuji ASA 400 color print film for all the photographs to assure consistency in this research project. I plan to photograph the planets that are observable from both locations as well as the constellation Ursa Minor. Together these photographs should show how light pollution affects the way we see the sky and how it affects astronomy research and enjoyment.

37 The Relationship between Smoking, Neuroticism and Sensation Seeking

Sarah Elisabeth Neff

Mentor: Pamelyn Macdonald, Psychology

Smoking in college students is prevalent on many campuses all over the United States. Smoking is a big part of a college student's daily routine, which over 28% of college students smoke. Reasons for smoking include stress, hunger, desire, alcohol related, stimulation or other social aspects. Smoking is also connected to personality. Neuroticism is a major personality trait recognized by psychologists; it is at times labeled "anxiety" or "emotionality". The present study investigated the links between smoking, neuroticism and sensation seeking. Results indicated that smokers had higher levels of neuroticism and higher scores on a sensation seeking scale, as predicted.

38 Non-Resident Importer (NRI)

Aaron Pearce Jacobson

Mentor: Michael Stoica, School of Business

An agricultural technologies company out of Sabetha, Kansas recently contacted Washburn University's School of Business on developing an internship to investigate possible avenues of conducting business in Canada. The internship was developed as a team project, with the other part of the team being fellow student, Dylan Austin. Together we did some preliminary research to make sure the Canadian market could support another firm. We approached this project with the mentality that there is no one solution, but rather there are solutions. We then began conducting research to answer the firms numerous concerns. My Apeiron project presents the end results of our internship.

39 Analysis of Allergenic Plant Extracts by Two-Dimensional Gel Electrophoresis

Laura Ross

Mentor: Jan Barton, Chemistry

Since the Giant Ragweed is one of the leading causes of hay fever in the United States, the long-term goal of this research is to discover if differential expression of proteins is found between ragweed species and related non-hay fever inducing species, such as nettle. Two-dimensional gels of plant protein extracts were analyzed and compared using GeneBio Melanie 4.4 software. Introduction of landmarks composed of standard proteins of known molecular mass and isoelectric point significantly enhanced pair matching between gels. SYPRO Ruby Red with relatively low background and high resolution was superior to tried silver staining methods for visualizing protein spots. Of the extraction techniques employed the enhanced solubilization method gave the best results. It displayed more protein spots and permitted more matched pairs than its nearest rival, the TBP phenol procedure

40 Adolescent Religiosity: The Effect of Religious Orientation on Risk Behavior

Jessica S. Bergmann

Mentor: Joanne Altman, Psychology

This study investigated adolescent religiosity. College freshmen and 5th through 12th grade students completed a demographic survey, an intrinsic-extrinsic religiosity scale, a quest scale, and a risk behavior survey. Results will address the development of religious orientation and its effect on participation in both risky and positive behaviors.

41 Effect of carbonation on blood lactate levels and exercise performance in college aged males.

Patrick R. McLaughlin, Candi Hoffman

Mentor: Paul Wagner, Biology

For many years, scientists and athletes alike have pointed to lactic acid buildup in the muscles as the culprit behind muscle fatigue. Since carbon dioxide is easily converted to carbonic acid in the blood and tissues, it has been recommended to avoid carbonated drinks before and during athletic performances. The reasoning behind this is that additional carbon dioxide from the beverage will create an acid-base imbalance that prevents the lactic acid being produced in the working muscle from being shuttled into the bloodstream as quickly. Data from our lab and others suggest that this maybe the case at high exercise intensities. In the current study, we tested a submaximal exercise protocol to see if carbon dioxide was delaying the appearance of lactate in the blood. Sixteen college age males were tested twice: once under control conditions in which non-carbonated sports drink was ingested prior to exercise and after ingesting a carbonated sports drink. The study was conducted as a double blind crossover in which the subjects acted as their own control. Exercise performance was accessed as changes in heart rate and resistance when exercise

was terminated. Data suggests that blood lactate levels and performance were not significantly different at submaximal intensities but changes were observed above the anaerobic threshold.

42 Chronological Changes in Mental Illness

Lacie A. Manns

Mentor: Michael Russell, Psychology

Previous data and research suggests that after a major threat to society and a person's well-being that the rate of mood disorders will increase in mental health facilities. The purpose of this project is to obtain data from two Psychological clinics located in Topeka, Kansas (Psychological clinic at Washburn University and The Family Service and Guidance Center) so as to determine whether there have been significant changes in the frequency of particular mental illnesses. This project will attempt to show support for, or reject the current beliefs given the events of 9/11. Prior studies have shown support for the increase only in mood disorders in adults as a result of a traumatic event. The current study will focus on all disorders and age groups because of the severity of the 9/11 event.

43 The Cognitive Competencies of Non-Human Primates Along the Phylogenetic Tree.

Melinda S. Guffey

Mentor: Joanne Altman, Psychology

This presentation will review the literature on the cognitive competencies of non-human primates along the phylogenetic tree. Cognitive skill sets of Old World monkeys, New World monkeys, and great apes will be compared.

44 Visual Adaptations of Grasshoppers

Jeanne M. Kee

Mentor: Ursula Jander, Biology

The visual acuity of partially predacious and non-predacious grasshoppers was measured and compared. We found that the eyes of partially predacious grasshoppers were adapted to capture more light.

45 Predator-Prey Population Models

Kyle Adrian Groundwater

Mentor: Kevin Charlwood, Mathematics & Statistics

We investigate population models for wolves, elk, coyotes, and the separate scenario of rabbits, coyotes and foxes. We explore how the initial populations of each affect the populations of all over a given time period. Calculations and graphs are performed with the software Maple.

46 Analysis of a Keith Phase Archaeological Site

Hannah E. Thompson

Mentor: Margaret Wood, Sociology - Anthropology

I have been working on a project through the Kansas State Historical Society involving a prehistoric Native American site dating to approximately 1000 years ago. It falls into a geographic region and time that identifies it as Keith Phase. My research is to determine if it is indeed Keith Phase, as well as to do the cataloging and analysis that will eventually

be published. Very few published articles exist on the phase, and my research is vital to providing information on the subject.

47 College Students' Perceptions on Stalking

Tracy L. Buchman

Mentor: Joanne Altman, Psychology

Reports of stalking vary in the literature from 2% to 94%. However, Dunn (1999) found that stalking was partly a matter of perception. This study investigated college student perceptions of the frequency of stalking by men and women to determine if perception could be driving reports of incidences of stalking.

48 Extraction of Allergenic Plant DNA for Polymorphic Analysis

Matthew A. Puderbaugh

Mentor: Janice S. Barton, Chemistry

In the course to understand the nature of an allergenic response in humans, identifying the responsible agent is essential. The Giant Ragweed, *Ambrosia trifida*, the Common Ragweed, *Ambrosia artemisiifolia*, and a member of the nettle family are currently being studied to see if there is a DNA pattern correlation between the two ragweed species, but not the nettle. In the course of the research, appropriate methods for extracting the DNA from the plant material were developed and set up techniques worked out for the next step of randomly amplified polymorphic DNA-polymerase chain reaction (RAPD-PCR).

49 Algae Diversification In Local Streams and Ponds

Mary E. Bolfing

Mentor: Vic Landrum, Biology

Algae play a vital role in aquatic ecosystems; they provide oxygen and serve as the base of the food webs present in ponds and streams. In order to understand what algae are present in local streams and ponds, an algal survey of three ponds and three streams was completed during the summer months of 2005. Sites were sampled at two-week intervals for eight weeks. Results show green algae (Phylum Chlorophyta) species were more commonly found for both ponds and streams, followed by diatoms (Phylum Chrysophyta). Euglenoids, indicators of water pollution, were found in both ponds and streams, however, the numbers were low compared to green algae and diatoms. Additionally, water temperature increases were positively correlated with an increase in species diversity among all groups.

50 Case Study in Decision Support Systems using Point of Sale (POS) in Retail.

Anna Saucedo, Lee Allen

Mentor: David Depue, Office, Legal, & Technology

Management information systems are used within business organizations to collect and process data into information for business processes; they include operations support functions such as decisionmaking, planning program implementations and production outputs. The challenge in this case study is to determine the potential benefits of a Point Of Sale system (POS) used at a retail business. Findings include the processing of data, recording and storing accounting records including sales data, purchase data, financial statements, market data such as customer profiles, customer purchase histories, inventory data, decision support data, and the production of outputs such as management reports. This presentation illustrates selected data based decisions and the technology used to reach the conclusions.

52 The Sociality of Orangutans

Candace Lea Wilcox

Mentor: Joanne Altman, Psychology

This presentation focuses on the unique sociality of the orangutan. Unlike the other great apes, orangutans are asocial in the wild and relatively unsocial in forced captive groups. However, the presence of an infant or young orangutan can break asocial barriers both in captivity and the wild.

53 Macronutrient Analysis of South Dakota Soils

Jessica Ekey

Mentor: Vic Landrum, Biology

Soil samples were analyzed for nitrogen (N), phosphorus (P), potassium (K), and pH from many sites around the Black Hills of South Dakota. These soil factors are the most important for plants, thus an analysis may reveal a correlation with the types of plants found at the sites. Analysis was performed using a macronutrient soil test kit.

54 Digital tracking of employee productivity and performance.

Ryan C. Doole

Mentor: Dave Depue, Office, Legal, & Technology

Tracking time-on-task for IT support staff in an international corporate operation. An analysis of factors that exacerbate goal attainment and employee efforts to mitigate the impact.

55 Topeka Area Water Study

Jessica Ekey

Mentor: Vic Landrum, Biology

In an eight week time frame during the summer of 2005, six different locations throughout the Topeka area (Shawnee Lake, Cedar Crest pond, Clairon pond, Soldier, Shunga and the Kansas Natural History Museum's creek) were sampled and tested. Each site was monitored for Chlorine, Carbon Dioxide, Dissolved Oxygen, Nitrates, Phosphates and other chemical indicators. The data was compared to previous years as an indicator of the water's quality. Overall, Topeka area water seemed to be free of contamination, with the exception of Soldier Creek, which contained higher levels of Ammonia and Iron.

56 The Effects of Verbal and Nonverbal Cues, Gender, and Viewpoint on the Detection of Deception

Katie M. Witham

Mentor: Mike Russell, Psychology

In everyday settings, it is critical to understand when another person might be trying to deceive us. Moreover, it could be argued that it is equally important for us to be able to detect when a person might be deceiving another person. The possibility exists that an individual's perspective or point of view may influence their perception of a message. As can be imagined, it may be easier to detect deception if the sender of the message is speaking directly to us than if the speaker is talking to with someone else. The counterargument can also be made. This study sought to determine

whether any differences exist between a direct receiver's and outside observer's ability to detect a deceptive message. The present study was conducted in two phases. In the first phase, participants listened to truthful and untruthful stories and indicated which cues were used in making their honesty judgments. A significant effect was found for cue and a significant interaction found for story content (True/False) and cue. These interactions were video recorded for use in the second phase of the experiment. In the second phase, participants viewed stories told in Experiment 1 from one of two camera angles. Participants rated the stories as true or false and indicated the cues used in making their honesty judgments. The findings are discussed in relation to the seeming importance of verbal versus non-verbal cues, gender, and viewpoint in the detection of deception.

57 The Effect of Olfactory Word Content on Memory Recall

Christin Elizabeth Hamilton

Mentor: Joanne Altman, Psychology

This study investigated the effects of olfactory word content on memory recall. Students were shown a list of 40 words; 20 words were associated with odors, (ie. roses). Participants recalled more olfactory than non-olfactory words. These data suggest that mere association with odor results in better memory recall.

58 Effectiveness of Altered Lenses on Visual Acuity

Whitney Bolz, Derek E. Swader

Mentor: Tracy Wagner, Biology

Have you ever squinted in order to see well? Squinting is a method commonly used to improve one's blurred vision. We propose that by manipulating the light sources entering the eye we can control the angles at which light enters the eye. By restricting the light entering the eye to only those light rays that are perpendicular to the cornea, then a less-blurred image can form on the retina. The purpose of this study was to measure the effect of a variety of squint-mimicking device on visual acuity. Between 20 and 30 subjects were tested, using both male and female subjects. Applicable subjects were those individuals falling between the ages of 18 and 28. The subject's visual acuity was first tested with no correction of any kind-this served as the control data. Visual acuity was then taken with the subject using squint-mimicking devices. There were four squint-mimicking designs used: single pin-hole, multiple pin-hole, horizontal slit, and vertical slit. Early data suggested that the single and multiple pin-hole devices were the most effective at improving subject's visual acuity.

60 The Effect of Daily Stress on Thyroid Function

Gwendolyn Meinecke

Mentor: Joanne Altman, Psychology

Research has shown that thyroid function is altered by severe stressors, but has overlooked the effect of normal stressors. Blood was analyzed for thyroid hormone levels during low stress (early semester) and high stress (finals week). If typical stress alters thyroid function, it may become a screening tool for thyroid dysfunction.

61 Nourishing the Wildflowers Within: Resonance through Word and Image

Danielle Smith

Mentor: Margy Stewart, English

It is often said that art imitates life, but maybe there is no imitation at all. Perhaps humans and nature exist synchronously in a world where the nature of beings resonates with the being of another. With this presentation I will attempt to show the interrelated existence between humans and the natural world. Through written word and photographs, I will let the connection of the beings do the talking and representation. With nature possessing human

attributes and humans taking on natural characteristics, this display attempts to unify the natural world with intrinsically distinct existence. We may be more closely linked than logic may suggest. The true task is allowing ourselves to nourish the wildflowers of our mind, follow them in their sprouting growth, and nourish our being with the discovery they bring. These photographs and words attempt to do just that.

62 Does stomatal number correlate with altitude in species of chokecherry (*Prunus virginiana*; Rosaceae) and Oregon grape (*Berberis repens*; Berberidaceae) in the Black Hills?

Whitney Bolz

Mentor: Vic Landrum, Biology

The leaves of two small shrubs, chokecherry (*Prunus virginiana*; Rosaceae) and Oregon grape (*Berberis repens*; Berberidaceae), were imprinted with clear fingernail polish to obtain stomatal counts as the altitude of the plants changed. Stomata on the lower epidermis were used, as this is the most numerous side. Counts showed that chokecherries did not follow a consistent pattern with altitude, and perhaps other factors, such as moisture, account for the altitudinal differences. Oregon grape did show a reduction as altitude increased, but not enough samples were gathered for a more accurate correlation.

63 Molecular Cloning and Analysis of a Previously Unknown Plasmid From *Naegleria minor*

Jon D. Kee

Mentor: John Mullican, Biology

In addition to chromosomal DNA, species within the free-living amoeboflagellate genus *Naegleria* contain circular plasmid (extrachromosomal) DNA molecules. These plasmids, with sizes ranging from 14-25 kilobase (kb) pairs, contain the ribosomal RNA (rRNA) genes and are termed rDNA plasmids. One species, *N. minor*, has been found to contain an additional DNA molecule thought to be another type of plasmid, much smaller than the previously detected rDNA plasmids. This *N. minor* plasmid migrates at approximately 6 kbp when compared to linear markers and is currently in the process of being cloned into *E. coli*. The cloned *N. minor* plasmid DNA will be sequenced then compared with genetic sequence databases for homology to known genes from other organisms. This will permit an initial characterization of potential functions for this plasmid. The long-term goals of the research are to understand the molecular biology of this plasmid and to use that information to develop a gene expression system for *Naegleria minor*.

65 Judgments of Learning versus Judgments of Forgetting

Scott G. Moreland, Chelsea E. Patton

Mentor: Michael McGuire, Psychology

We conducted two experiments comparing two types of metamemory judgments. In both experiments participants studied word pairs, predicted recall performance, and received a test over the word pairs. For both experiments retention interval (15 minute, 48 hour, 1 week) and delay (pre- and post-retention interval) of metamemory judgment served as our major independent variables. We assessed the effects of these independent variables on recall accuracy, metamemory judgment magnitude, and metamemory judgment accuracy (relative and absolute). The main difference between the two experiments was the framing of the metamemory judgment. In the first experiment participants were asked to indicate their likelihood of remembering each word pair, while in the second experiment they were asked to indicate their likelihood of forgetting each word pair. Preliminary results suggest that retention interval affects both recall and metamemory judgment magnitude, but retention interval differentially affects metamemory judgment accuracy. Results also suggest that delay or time of metamemory judgment relative to test is critical for more accurate metamemory judgments. The differences in framing effects will also be discussed.

66 Synthesis of Stilbene Derivatives and Other Alkenes Using the Wittig Reaction Mediated by Cesium Fluoride

Nicholas D. Wilson

Mentor: Sam Leung, Chemistry

Cesium fluoride was used as a successful mediator in Wittig reactions. Various stilbene derivatives were synthesized by the Wittig reaction in high yields by using substituted benzaldehydes, benzyltriphenylphosphonium salts, and cesium fluoride. Cesium fluoride was also shown to be capable of mediating a number of Wittig reactions with simple ylides; however, these reactions only produced low to satisfactory yields.

67 Effects of light level on wide-band tracheid initiation and development in leaf tissue cultures of *Anacampseros rufescens* (Portulacaceae).

Ashley L. Alderfer

Mentor: Vic Landrum, Biology

Wide-band tracheids (WBTs) are novel tracheids producing a wide secondary wall; hypothetically, the wide secondary wall prevents the primary wall from collapse and hydrogen-bonding during water stress. Earlier experiments have shown, with varying results, that light level plays a role in the initiation and development of WBTs from germination to flowering. To determine the effect of light levels, leaf tissue cultures of *Anacampseros rufescens* (Portulacaceae) were grown on callus initiation medium, allowed to multiply, and exposed to varying light levels as the independent variable. Light levels were no light, 2,050, 6,850, 7,700, and 11,020 lux. Previous experiments had shown that WBT development were limited when light levels were below 4,000 lux. Our hypothesis was that WBT numbers would increase with increasing lux level. Results show that only the 11,020 lux treatment showed WBT development. These results support the general hypothesis that higher light levels should initiate WBT formation.

68 Liquid emulsion prints

Sara Meier

Mentor: Marydorsey Wanless, Art

Liquid emulsion is a chemical used for photographic printing that allows a number of different surfaces, such as glass, metal, fabric or wood, to become photo sensitive. Once the liquid emulsion is properly applied and allowed to set up, the surface can be printed and developed like a regular sheet of photo sensitive paper. The emulsion does not adhere to each surface in the same fashion, thus providing a variety of effects (desired or otherwise) that are not easily replicable on photo paper. Also, materials within the different surfaces might react adversely to the chemicals in either the emulsion or those used in the development stage, so this must be taken into consideration for both the safety of the artist and the stability of the surface