Washburn University Apeiron α π ε ι ρ ο ν

April 23, 2010

Schedule of Events

10:30 a.m. – 11:00 a.m.	Student Registration and Poster Setup *Mabee Library*
11:00 a.m. – 1:00 p.m.	Fine Arts Performance Session *Mulvane Art Museum and Carole Chapel*
1:00 p.m. – 3:00 p.m.	Oral Presentation Session *Henderson Learning Resources Center* • Session α: Room 103 • Session β: Room 107 • Session γ: Room 118 • Session δ: Room 203 • Session ε: Room 207
3:00 p.m. – 3:40 p.m.	Welcome Shaun Schmidt, Chair, Apeiron Committee *Mabee Library* Recognition of Student Designer Erika Lucero Michelle Shipley, Apeiron Committee Introduction of Last Lecture Bruce Mactavish, Associate Dean, College of Arts and Sciences Last Lecture William O. Wagnon, Professor Emeritus of History *Mabee Library*
3:40 p.m. – 5:00 p.m.	Poster Session and Reception *Mabee Library*

WTE Denotes Washburn Transformational Experience

Last Lecture

presented by

William O. Wagnon

Professor Emeritus of History

William O. Wagnon earned a PhD from the University of Missouri at Columbia and received the Newcomen Postdoctoral Fellowship at Harvard University. He joined the Washburn History faculty in 1968, rising through the academic ranks from Instructor to Professor. He served in various administrative posts, including department chairman and director of the university International Center, the Center for Kansas Studies, and the Center for Community Partnerships. He also was president of the Faculty Senate and the chapter of AAUP. At the state level, his service included president of the Kansas Conference of AAUP and the Kansas History Teachers Association. Upon his retirement in 2008, he endowed a scholarship to recognize excellence in preparation to teach history in the schools. He devotes his professional skills to the Shawnee County Historical Society, serving in various leadership capacities and contributing to its annual publications on local history. He has been instrumental in the development of the Historic John and Mary Jane Ritchie House to serve as an area heritage awareness center.

Mabee Library

3:00 p.m. – 3:40 p.m.

The Apeiron "Last Lecture" tradition began in 2009 with a lecture delivered by Dr. Ron Ash, Professor Emeritus of Biology.

Fine Arts Performance Session
11:00 a.m. – 1:00 p.m.

11:00 a.m. **Mulvane Art Museum**

Music in Color: Debussy's Chamber Music with Harp
Mariela Flores Barquero, William Darst, Roman Carranza, Roberto Henriquez, EstherValladares, Caroline Drexler, Erica Michel, and Manuel Tabora
Mentor: Steven Elisha, Music

Performance of Claude Debussy's "Danse sacre and profane" and the "Sonata for harp, flute and viola." Debussy's music is considered as a musical expression of the artistic movement known as impressionism. The colorful harmonies in Debussy's works express a feeling of vagueness rather than defined articulations. We would like to complement the performance of Debussy's two only, and very significant, works for harp and ensemble, with a small presentation about this unique composer and his musical style.

11:00 a.m. **Carole Chapel**

Exploring Epeolatry
Tess K. Wilson
Mentor: Penelope Weiner, Theatre

My love for the English language causes me to approach life with a literary eye. I can't help but see the outside world as a series of colors, ideas, and characters. Through my poetry, I don't intend to change anyone's point of view or to make anyone see the world as I do; I merely hope to present my thoughts in a way that might entertain and open the human mind. As I have been involved in theater since a young age, I thought it might be an interesting task to combine these two mediums in a single project. This series of poems is one that explores my love for both poetry and performing. I find poetry is sometimes more meaningful and emotionally provoking when read aloud to an audience, and I would relish the opportunity to share my art.

11:20 a.m. **Carole Chapel**

Three Poems about Love----Robert Frost, e.e.cummings and Edgar Allan Poe
Chenning Fu
Mentor: Penelope Weiner, Theatre

The three poems are "The Telephone," "i carry your heart with me," and "Annabel Lee." In my reading and introduction, I will explore the varied perspectives among the three poems about love. "The Telephone" is the most indirect one and it is about the communication between lovers. "i carry your heart with me" expresses the hero's love of his lover with very direct words and expressions. "Annabel Lee" is darker than the other two poems and it is about both the happiness of having love and the sadness of losing one's lover.

11:40 a.m. **Carole Chapel**

A Study in Collaboration: The Mid-20th Century French Work of Francis Poulenc and Jean de Brunhoff

Michele Marie Flanagan

Mentor: Shiao-Li Ding, Music

This presentation is an attempt to integrate my two academic major areas, music and French, as an interdisciplinary study, and to create a multi-media presentation, demonstrating musical selections from "L'Histoire du Babar," a 20th c. French work. This work was created by French author and illustrator Jean de Brunhoff, and French composer Francis Poulenc. The presentation will consist of a short synopsis of the original story of "Babar, Le Petit Elephant," in English, followed by a short musical demonstration which includes French narrative, and is combined with a visual presentation of original drawings by Jean de Brunhoff.

11:50 a.m. **Mulvane Art Museum**

Obsession: J. S. Bach's Influence on the Solo Violin Works of Eugene Ysaye

Manuel Emilio Tabora

Mentor: Larisa Elisha, Music

In the early 18th Century, J. S. Bach wrote his famous Sonatas and Partitas for solo violin. These pieces have become a staple in the repertoire of violinists around the world. In composing these works, Bach placed himself in the great Germanic tradition of polyphonic compositions for the violin, with composers such as Pisendel, Westhoff, and Biber being the pioneers. Almost 200 years later, the great Belgian violinist and composer Eugene Ysaye continued that tradition. His deep respect for Bach's genius haunted his compositions in this genre. This presentation will compare and contrast works by the two masters, and a performance of both will follow.

12:20 p.m. **Mulvane Art Museum**

The Influence of French Culture on the Harp: Focusing on the Impressionist Era's Maurice Ravel's Introduction and Allegro

Lauren A. Woidela

Mentor: Courtney Sullivan, Modern Languages *WTE*

Having records dating back from 3000 B.C. the harp is one of the oldest instruments known to man, yet has undergone many make-overs. Some of the more drastic changes took place during the impressionist movement in France. This presentation will show how much effect France had on the instrument. There will be an analysis and a performance the historical harp piece, Introduction and Allegro written for harp and chamber ensemble of flute, clarinet and a string quartet.

Oral Presentation Session
1:00 p.m. – 3:00 p.m.

 **Session α**

Moderator: Yvette Jenkins

1:05 p.m. **Henderson, Room 103**

Capital Punishment: The Test of Justice and Humanity
William Robert Lawrence
Mentor: Russell Jacobs, Philosophy – Religion *WTE*

Human nature and the role of society have been topics of debate for centuries. Should we have a civil society? What kinds of rules must we have? The answers to these questions have varied but the main conclusion is: yes, we need a society to protect us and foster growth. Through the development of society, laws establishing order and recognizing rights must be adopted. In order for these laws to be respected, punishment for violation of such laws must also be adopted. The concept of punishment is one of much discussion and disagreement. Is capital punishment a deterrent? Does the punishment fit the crime? I will discuss these philosophical issues at hand, lay out the capital punishment debate and argue for abolition on ethical and moral grounds.

1:30 p.m. **Henderson, Room 103**

Three Men of Publius: The Importance of Publius as a Pseudonym in "The Federalist Papers"
Kevin D. Burton
Mentor: Alan Bearman, History

The use of pseudonyms was a common occurrence in Early America and important for several reasons. Pseudonyms revealed a deeper meaning of the author's intent in their writings. Of note, Alexander Hamilton, James Madison and John Jay wrote The Federalist using the pseudonym of Publius. My paper examines the importance of using the pseudonym of Publius, one that forced readers to think about the ideas that were put forth in The Federalist instead of individual biases on the men that used the pseudonym. Furthermore, my essay examines why Hamilton chose Publius as a pseudonym, and how the pseudonym of Publius helped Hamilton, Madison, and Jay make their arguments.

2:00 p.m. **Henderson, Room 103**

Teaching Critical Thinking in American Elementary Schools
Linyan Zhan
Mentor: Sandra Tutwiler, Education

Critical thinking is an effective thinking skill. American education is well-known for its emphasis on teaching critical thinking. As an international student, I want to find out how American elementary school teachers teach critical thinking in an era of standardized tests. Four elementary school teachers are interviewed around the following four questions: 1. how do they define critical thinking? 2. what are their perceptions of the importance of critical thinking? 3. how do they incorporate critical thinking into classrooms? 4. what are the obstacles of teaching critical thinking? Teacher interview data will be analyzed for common themes regarding teaching critical thinking in elementary schools. Although four teachers can't represent all the elementary teachers in the United States, their words and opinions will provide insight into teaching critical thinking in American elementary schools.

2:25 p.m. **Henderson, Room 103**

The Angel in the Dark
Daniel C. Minde
Mentor: Thomas Prasch, History *WTE*

What is hell? Hell is to walk through the city of Warsaw, torn apart by war and occupied by Nazi forces intent on the Final Solution, to save a Jewish child from death. Irena Sendlerowa, a Polish Catholic social worker, went to homes in the ghetto to smuggle hundreds of children out. In pursuit of the mission, she did not reveal the identities of those she saved or members of her underground network. Irena and her network of 25 members are unsung heroes who braved countless threats and overcame many challenges in order to do what was right.

Session β

Moderator: Sharla Blank

1:05 p.m. **Henderson, Room 107**

Depictions of Female Detectives on Major Network Prime-Time Television Cop Shows
Kamesha D. Moore
Mentor: Sangyoub Park, Sociology - Anthropology

This research paper attempts to investigate how television shows portray women today. TV programs tend to depict women in traditional gender roles. Further, women are underrepresented in the leading roles in television dramas. In reflecting women's status improvement today, we argue that television should depict women as non-stereotyped roles. We contend more television shows will contain females as the leading characters. This research analyzes popular crime dramas to examine how women are portrayed and whether females play the leading roles in the

programs. Since detectives and police officers have been male-dominated occupations, crime dramas are a perfect candidate to explore the key issues of gender on TV – the portrayal of females and the character of female.

1:30 p.m. **Henderson, Room 107**

Akhenaten: Ancient Egypt's "Dirty Little Secret"

Hannah Thompson

Mentor: Thomas Prasch, History *WTE*

Akhenaten's conversion of the state religion of ancient Egypt to the sole worship of the Aten in the 14th century BCE seems only a blip in the history of the country, but to those who ruled after him it was a scandal that needed to be erased permanently for generations to come. By examining the destruction of images and written works of Akhenaten after his death through the lens of anthropological theories of pollution, it becomes clear that he can be defined as being 'unclean' for falling outside of the cultural norms of his day.

2:00 p.m. **Henderson, Room 107**

A Comparative Study of Piano Pedagogy for Young Beginners Practiced in Topeka, Kansas, and Hong Kong, China

Hiu Lam Lau

Mentor: Shiao-Li Ding, Music *WTE*

As a college student studying the piano at Washburn University, I have become increasingly aware of the different teaching styles in Hong Kong where I am from and in the United States. This presentation is a summary of interviews and in-depth analysis of information acquired from six piano instructors of Hong Kong and Topeka. The first part of this presentation I will discuss similarities and differences from piano pedagogy perspectives between the two places. The second part, I will discuss teachers' qualities, responsibilities, as well as proper studio management required in both places. Though the scope of this research project is rather limited, the information I gathered indeed reflects certain cultural dissimilarities between the United States and China.

2:25 p.m. **Henderson, Room 107**

Gender Stereotypes in Print Advertising: Women in Traditional Roles

Caitlin R. Corbin

Mentor: Cheryl Childers, Sociology – Anthropology *WTE*

This research project has a specific purpose. The objective is to determine if modern women are depicted in popular print advertising like females have proven to be in past studies, examining

the correlation between the portrayals of gender in advertisements and gender identity models, with specific attention to the portrayal of women in family oriented scenes.

Session γ

Moderator: Erin Chamberlain

1:05 p.m. **Henderson, Room 118**

Company Analysis of Sprint Nextel, Inc
David Packard
Mentor: Norma Juma, School of Business

An analysis of Sprint Corporation reveals issues related to the company's general and specific environments, which influence Sprint's strategies at varying levels. The research findings relate to both external and internal business environments, including political environment, economy, socio-cultural, technology, customers, competitors, suppliers, industry regulation, and advocacy groups. The corporate-, industry-, and firm-level strategies employed by Sprint Corporation in these areas are revealed and discussed. Aspects of the company's leadership are reviewed prior to recommendations for the company. Recommendations include emphasis on low-priced offerings, continued substantial investment in research and development, and an expansion of the supplier base.

1:30 p.m. **Henderson, Room 118**

One Step Forward, Two Steps Back: Modern Applications of the Two-Step Flow
Regina M. Budden
Mentor: Maria Raicheva-Stover, Mass Media

Paul Lazarsfeld's two-step flow theory of communication is a very formative theory for an entire era of media research. This presentation explores the evolutionary stages of the theory, with a special emphasis on its modern applications, which encompass the Web and social media.

2:00 p.m. **Henderson, Room 118**

To the Utmost Bounds: The Mexican-American War of 1848
Curtis W. Leeth
Mentor: Kim Morse, History *WTE*

A transnational analysis of the Mexican-American War that places the war in the context of relations between the United States and Mexico. Mexico, politically unstable and divided proved unable to match the perfect alignment of economic, political and ideological concerns in the United States. The result was a decisive United States victory that permanently altered the

state of affairs between the two states and established the dependency of Mexico on the United States that persists into the twenty-first century.

2:25 p.m. **Henderson, Room 118**

Fighting for Justice: The Cases of Korematsu, Hirabayashi and Yasui
Sara E. Hoyt
Mentor: Rachel Goossen, History

Following the attack on Pearl Harbor, over 100,000 people of Japanese descent both citizen and non-citizen were forced to relocate to internment camps for the remainder of World War II. Three young Japaese Americans resisted the internment order and were convicted of violating this order and served prison sentences just for being Japanese. It was not until 40 years later, that new evidence would be found that brought these cases back to the courts to get these wrongful convictions overturned. With the help of a very good team of lawyers, Korematsu, Hirabayashi and Yasui were finally vindicated which gave the Japanese American community the motivation needed to seek redress for the treatment they received so many years before.

Session δ

Moderator: Vickie Kelly

1:05 p.m. **Henderson, Room 203**

A Mathematical Study of the Game of Sprouts and Similar Games
Misty Long
Mentor: Sarah Cook, Mathematics & Statistics

This project is designed to consider the mathematics in the game of Sprouts and its variations—Brussels Sprouts and Stars and Stripes. Sprouts and its variations are two-player, pencil-and-paper games in which the last player capable of making a move is the winner. Each game that we will consider is very simple to play; however, all three offer some interesting mathematical questions and require a more difficult analysis in the mathematics behind them. We focus primarily on the length (that is, the number of moves) for each of the three games. We use induction, Euler's Characteristic Equation and mathematical logic to examine both the maximum and minimum lengths of the games.

1:30 p.m. **Henderson, Room 203**

Distributable Educational Material Markup LanguageTM

Grant S. Robertson

Mentor: Bruce Mechtly, Computer Information Sciences *WTE*

The Distributable Educational Material Markup LanguageTM (DEMMLTM) is an XML format and system for classifying and organizing the hierarchical tree of all possible educational material to a degree never before attempted. Multiple different explanations or presentations can exist for any one fact within any very specific topic. Anyone can easily contribute any amount of material to what will hopefully grow to become a vast library of vetted content for all to use. This facilitates a new level of flexibility in CBT by allowing educators to specify study material while still allowing students instant access to additional material as their needs require. This presentation will briefly discuss the draft version of the XML schema for the content, recently produced as a BIS capstone project. Next, other aspects of the DEMMLTM system will be discussed. These include: the classification system, the contribution and vetting processes, benefits over similar systems, and the work still to be done.

2:00 p.m. **Henderson, Room 203**

Isolation and Analysis of Proteins from the Leaf Material and Pollen of Ambrosia artemisiifolia L., the Common Ragweed

Carole L. Jontra

Mentor: Janice Barton, Chemistry *WTE*

Many people are affected each year by sensitivity to allergenic proteins in the pollen and leaves of *Ambrosia artemisiifolia*, the common ragweed. Many protein analysis methods examine proteins in a broad range from 3-10 pH. As most proteins exist and function in environments ranging from 4-7 pH, it was reasoned that an analysis of the proteins in that range would be the most productive in an effort to isolate unique, possibly allergenic proteins. An isoelectric focusing (IEF) fractionator was used to pre-separate plant protein samples into narrow pH ranges. The 4.6-7 pH protein fraction was subjected to further separation using a two-dimensional IEF sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Computer analyses of the protein spots in the resulting gels determined that the use of narrow pH range samples provided a better resolution of proteins, thereby increasing the probability of isolation and identification of potentially unique proteins in common ragweed.

2:25 p.m. **Henderson, Room 203**

Analysis of Unique Protein Densities in Giant Ragweed Using LC MS/MS

Scott N. Ashley

Mentor: Janice Barton, Chemistry *WTE*

Allergic reactions have been associated with several antigens found in common and giant ragweed. The goal of this research is discovery of assorted proteins that may carry epitopes for

inducing hay fever. Further analysis of our preliminary results revealed that 90% of our unique spots were within a pH range of 4-7. With the higher resolution, we successfully identified more spots unique to both pollen and leaf. Unique spots found in both leaf and pollen samples were excised from 2-D gels then digested in trypsin. Samples were submitted to the KU Analytical Proteomics Laboratory for LC MS/MS analysis. The most promising result was a sequence and molecular mass match of 24% coverage to a profilin iso-allergen currently only characterized through cDNA. It is our hope that identification of unique proteins will not only validate our method, but discover previously uncharacterized proteins.

Session ε

Moderator: Tony Silvestri

1:05 p.m. **Henderson, Room 207**

To Count or Not to Count: Latin Squares, Combinatorics and Dynamic Programming
Jessica A. Luse
Mentor: Donna LaLonde, Mathematics & Statistics

This presentation will describe the work exploring the intersection of recreational mathematics with combinatorics. The popularity of Sudoku puzzles encouraged mathematical interests in Latin squares or ordered arrays of elements. The work described in this presentation studied n x n Latin squares, but most of the presentation will focus on 4 x 4 arrays. Specifically this presentation will investigate irreducible or minimal puzzles to explore the minimum number of givens required to ensure a unique solution. The presentation will also consider the assignment of level of difficulty to puzzles. As a part of this discussion, this presentation will consider the nature of mathematical proof. Although traditional counting techniques will be presented, the presentation will discuss the application of dynamic programming to this problem.

1:30 p.m. **Henderson, Room 207**

Amidst Media Debate, Potential for Losing Sight of Larger Picture
Andrew Michael Moskow
Mentor: Steven Cann, Political Science – Geography *WTE*

The purpose of this study was to assess the relationship between media coverage of the Vaccine-Autism debate and immunization of three vaccines that have been associated with the controversy, which are DTaP, MMR, and HepB.

2:00 p.m. **Henderson, Room 207**

MRSA and your Stethoscope

Diana Estes

Mentor: Shirley Waugh, School of Nursing *WTE*

Methicillin-resistant *Staphylococcus aureus* (MRSA) is an antibiotic resistant strain of *Staphylococcus aureus*. *S. aureus* is a bacteria that is normally present on the skin and in the nose of healthy people. Sometimes *S. aureus* breaches the body's normal defenses and causes an infection. These infections can be treated with antibiotics; however, improper used of antibiotics has resulted in the survival of antibiotic resistant bacteria. MRSA is one of these antibiotic resistant bacteria. Studies have demonstrated the presence of MRSA on doctor's white coats, in ambulances, and on the stethoscopes of EMS providers. Studies also show that compliance with contact precautions when caring for patients with MRSA are as low as 28%. In addition to practicing contact precautions with know cases of MRSA, stethoscopes should be sanitized after each patient contact. Alcohol sanitizing foam can be used to clean your stethoscope while you clean your hands.

2:25 p.m. **Henderson, Room 207**

A Comparison of the Wood's Lamp and Alternative Light Sources in the Recovery of Biological Evidence From Sexual Assault Victims

Scott M. Bush

Mentor: Sue Salem, Chemistry *WTE*

This presentation affords Apeiron attendees the opportunity to learn about a collaborative research project conducted as part of a student internship during the summer of 2009 between the Johnson County (KS) Sheriff's Office Criminalistics Laboratory and Kansas City-area Sexual Assault Nurse Examiners (SANEs). A comparison was made between the Wood's Lamp UV Light Source currently in use in area emergency rooms, and the Alternative Light Sources (ALS) used to perform crime scene investigations, to determine the efficacy of each in locating biological evidence on the skin of sexual assault victims. This research directly impacts the examination and evidence collection protocols to be used in these examinations.

Poster Session
3:40 p.m. - 5:00 p.m.

1

Impact of Negative Self-presentation Concerns on Social Anxiety During a Presentation
LuRita Boggs
Mentor: Cynthia Turk, Psychology *WTE*

Moscovitch and Huyder (2010) propose three domains of self-attributes that are related to the experience of anxiety in social situations. Specifically, they propose that individuals are concerned about deficits in appearance, visibility of anxiety symptoms, and social competence. This new model of social anxiety has been evaluated in only a limited number of studies. The current study will examine whether concerns about deficits in appearance, visibility of anxiety symptoms, and social competence are related to anxiety experienced during a talk on a controversial topic.

2

RT-PCR Analysis of Matrix Metalloproteinases in Chick Emrbyos
John D. Stamm
Mentor: Duane Hinton, Biology

During embryogenesis, the development of tissues requires cellular proliferation, differentiation, cell migration, cell death and tissue remodeling to accomplish full functionality. A most extreme form of tissue remodeling occurs during the development of the limbs. The focus of our research was the degradation of the extracellular matrix within the limbs. In this experiment, we studied the level of expression of a class of enzymes known as matrix metalloproteinases in developing chick embryos. We isolated total RNA from Day 3 and Day 4 whole chick embryos and Day 5 – Day 17 chick forelimbs and hindlimbs. Through PCR amplification, the expression of the various MMP's was observed. MTMMP, a membrane-bound MMP, was expressed uniformly for the hindlimbs during all days of development. MTMMP expression for the forelimbs showed a high level of expression until Day 11 of development and showed little to no expression for the subsequent days. MMP-9 and MMP-13 expression in the forelimbs began at Day 11 of development, while MMP-9 and MMP-13 expression in the hind limbs began at Day 13 of development. These results indicate that some of the matrix metalloproteinases possessed unique, differential expression patterns between the forelimbs and the hind limbs. Identification of the differential expression will allow for further research by specifically localizing the regions of expression in the limbs by performing in situ hybridizations.

3

Implementing Head Lice Prevention and Treatment Education Into Kindergarten Classrooms

Kara Ann Bruning
Mentor: Debbie Isaacson, School of Nursing

Because school nurses are often looked to as the resource for education on such conditions as head lice, it is important that elementary school children receive accurate information. Most rural settings only have one or two school nurses for an entire district, so time constraints hinder nurses' ability to timely and appropriately educate children on head lice. A teaching session including facts about head lice, prevention, and treatment was carried out to better equip the children and community with information about head lice in a kindergarten class in Sabetha, KS. Pre and post-program surveys were administered to evaluate the effectiveness of the teaching, as well as information packets to all elementary classroom teachers at Sabetha Elementary School, and a permanent resource for the kindergarten classroom where the project took place. Results proved that prior to the education, common misconceptions about head lice were believed by students and their families.

4

Prey Selection in the Praying Mantis (Tenodera sinensis)

Rebecca A. Schmidt
Mentor: Lee Boyd, Biology *WTE*

A key component of examining prey preferences in any predatory animal is to present the subject with different types of prey items and observe the predator's behavior to determine if a preference is present. To explore prey selection in adult praying mantises (Tenodera sinensis), mantises were shown computer displays of moving circles of various sizes and colors. *T. sinensis* appears to discriminate prey based on both size and color. Mantises appear to prefer the small and medium-sized targets and to avoid yellow targets.

5

Progress Toward the Synthesis of Expanded Oxophlorins

Alicia A. Burris
Mentor: Sam Leung, Chemistry *WTE*

Oxophlorins are porphyrin-like compounds that contain a carbonyl group between two of the pyrrole subunits in the macrocycle. Many porphyrins and related compounds have been found useful in photodynamic therapy (PDT) for cancer or as contrast agents in magnetic resonance imaging (MRI). We plan to synthesize some expanded oxophlorins to study their stability, ion binding ability, and UV-visible absorptions. Compared to the normal oxophlorins, these expanded oxophlorins will contain two additional carbon-carbon double bonds within the macrocycle, resulting in a larger internal cavity which may be capable of binding larger ions, such as gadolinium. Also expanded oxophlorins may be useful as photosensitizers in PDT for

cancer. Two types of expanded oxophlorins were attempted to be synthesized through a dipyrromethane precursor with two aldehyde groups. This precursor was synthesized successfully, and attempts have been made to continue the synthesis of an expanded oxophlorin.

6

Promoting Breastfeeding in Adolescent Mothers
Rebecca Lynn Mathews
Mentor: Nora Clark, School of Nursing

The purpose of this study is to attain knowledge about the attitudes, beliefs, and opinions about breastfeeding of adolescent mothers and to provide education on the benefits of breastfeeding to the baby and mother. Adolescent mothers are below the Healthy People 2010 guidelines for breastfeeding initiation, duration, and exclusivity. Research has shown that increased exposure to breastfeeding education and information is linked to an increased likelihood of breastfeeding.

7

The Effect of Parent Divorce and Pet Ownership during Childhood on Current Psychological Well-being and Family Harmony
Alicia N. Moulden
Mentor: Joanne Altman, Psychology *WTE*

The purpose of this study was to investigate whether having a pet as a child would mitigate the negative effects of divorce in children. Participants completed a demographic questionnaire to collect information on pet ownership during childhood. They completed the Companion Animal Bond Scale to confirm attachment to childhood pets. Participants were measured on the Psychological Well-being Scale and the Intact/Stepfamily Harmony Scale which had 3 subscales. The study found that children raised in stepfamilies with pets felt more like one family or two smaller families together than did children raised in stepfamilies without pets. Interestingly, participants who grew up with pets (independent of family structure) had lower feelings of negative well-being, but lower levels of positive well-being, as well.

8

Health Beliefs of Urban and Rural Kansans
Lisa Pearse
Mentor: Jane Tanking, School of Nursing *WTE*

Life in frontier and rural areas can be vastly different from life in urban cities. One aspect of living that can vary greatly between city and rural-dwellers is health care. Rural persons present unique health care needs and perceptions. Whereas someone living in town can drive a few blocks to the doctor's office, a person in a rural community may drive hours for care. The problem guiding this research study is that health promoting behaviors of rural Kansans are currently unknown. In order to determine how rural persons differ from urban-dwellers, health

promoting behaviors in both groups should be examined. The following research questions will be addressed: How do rural and urban Kansans differ in managing illness and injury before seeking care? What factors contribute to a person's decision to seek professional health care? How do urban and rural Kansans differ on their opinion of access to care? What support systems do rural and urban Kansans utilize when they are ill?

9

A Comparative Review of Cognitive Ability in Animals and Humans

Ashley E. Manis
Mentor: Joanne Altman, Psychology

WTE

Comparing cognitive abilities among humans and other species has become of great interest to comparative psychologists. Abilities range from simple cognitive tasks, which most mammals and birds can master, to complex cognitive tasks which are unique to humans and a few other mammals with large brains, especially other hominids (great apes). Researchers have been particularly interested in determining those cognitive abilities that may be uniquely human. Language, self recognition, and theory of mind were all once considered to be uniquely human. However, these are evident in higher-order (taxonomically) mammals like the great apes. The bar for what is uniquely human continues to be raised. A new focus is on executive functions of the prefrontal cortex, which is slow to develop even in humans. This presentation will review the evidence, to date, for comparative abilities between human vs non-human primates.

10

Religiosity as a Factor in Overcoming the Negative Effects of Growing Up in a Low Socioeconomic Status

Adrianne Marie Cooper
Mentor: Joanne Altman, Psychology

WTE

The purpose of this study was to investigate religiosity as a factor in overcoming the negative effects that are associated with a low socioeconomic status. Participants completed surveys to determine their socioeconomic status as a child and level of intrinsic and extrinsic religiosity. They also completed measures on career confidence, risky behavior, and general mood. Results showed no differences in risky behavior, mood, or confidence in finding a career as a function of socioeconomic background or its interaction with religiosity. Failure to find differences between socioeconomic groups may be due to relative homogeneity in the college sample. One interesting effect we did find was that extrinsically religious participants were more likely to use tobacco products and consume alcohol.

11

The Effect of Feedback About Texting While Driving on Attitudes Towards Texting

Megan L. Wells
Mentor: Joanne Altman, Psychology

WTE

Research shows that many people text message while driving. This study investigated whether showing people the mistakes they make while texting and driving will change their attitude towards texting while driving. College students played a driving video game (the Mario Cart for Wii) while texting and without texting. They evaluated how they performed with and without text messaging and repeated a survey to evaluate their willingness to text while driving. The results will address whether evidence of poor performance while texting is enough to dissuade students from texting while driving.

12

Vegetative Differences between the Restored and Native Prairies at Stone Nature Center, Topeka, Kansas

Samantha M. Kriley
Mentor: Sharon Ashworth, Biology

This study was conducted at Stone Nature Center in Topeka, Kansas. At the Stone Nature Center there are two prairies, one that is restored and one that is native. There should be no difference in the species richness or species evenness in the restored and native prairies. Thirty plots were surveyed in each prairie. The top three species in the restored prairie were, *Andropogon gerardii* (Big Bluestem), *Andropogon scoparius* (Little Bluestem), *Boutelua curtipendu* (Side-Oats Gramma). The top three species in the native prairie were *Andropogon gerardii* (Big Bluestem), *Ceanothus herbaceous* (New Jersey Tea), *Andropogon scoparius* (Little Bluestem). The native prairie had a larger diversity index then the restored prairie.

13

Amide Reduction by in situ Generated BH_3·THF Adduct

Thomas Robben
Mentor: Shaun Schmidt, Chemistry

The focus of this research was to synthesis amine functionalities for a polycyclic cage system. These macrocyclic complexes have been used as imaging agents and in radiotherapy. One step in the synthesis requires efficient reductions of amides to amines. In order to determine the optimal condition for amide reduction, a model amide and diamide were synthesized. The preparation of *N*,*N*′-bis(2-phenylethyl)-butanediamide (55% yield) and *N*-(2-phenylethyl)benzenepropanamide (84% yield) is reported. The BH_3·THF adduct completes the reduction of the amide and diamide (72% and 75% yield respectively). The commercial

BH_3·THF adduct has a poor shelf life and an in situ generated BH_3·THF adduct was investigated for this reason. Using similar conditions and reagents that efficiently completed the reduction of nitriles to primary amines; the amide reacted with $LiBH_4$, CH_3I, and THF at 65 °C to form the amine (64% crude yield).

14

"But I Worked So Hard"

Beth A. Ryszewski
Mentor: Joanne Altman, Psychology

WTE

The literature shows that there is a disparity between teacher and student perceptions in the amount of effort that accounts for grades. This review examines the relationship between student output and grades, and the potential source of this relationship. This presentation will also predict whether this relationship between perceived effort and performance will extend beyond education to the work force.

15

Analyzing HSV-1 UL34 and UL31 Interactions Using A Yeast Two Hybrid System

David Reed and **Lilly Varner**
Mentor: Susan Bjerke, Biology

Herpes Simplex Virus-Type 1 is a DNA virus that causes cold sores. The virus leaves the cell by using viral proteins UL34 and UL31. UL34 and UL31 proteins interact and are utilized in the primary envelopment process. Mutations in the UL34 and UL31 proteins were generated to determine if these two proteins still interact. A Yeast Two Hybrid System was used to transform yeast cells with DNA containing genes for the wild type and mutant versions of UL34 and UL31. After successful transformation, the yeast were plated onto media missing specific amino acids to determine protein interactions. Positive interactions were seen between mutant UL34/CLO5 × UL31 C terminus. No interactions were observed between mutant UL34/CLO5 × UL31 C terminus*; however, a lack of interaction is not definitive, as no interactions were observed with the positive control. These results will lead to a better understanding of the role of UL34 and UL31 in HSV-1 primary envelopment.

16

The Effect of Progesterone Levels on Wisconsin Card Sorting Task Performance

Sara Elizabeth Thielenhaus
Mentor: Joanne Altman, Psychology

WTE

Sex hormones, which fluctuate across the menstrual cycle, play a significant role in cognitive performance. Gasbarri (2008) and Holmes (2002) show high concentrations of estrogen impair memory. However, Solis-Ortiz (2004) showed executive function performance is better when progesterone levels are highest and estrogen levels are moderate. The question arises whether

progesterone improves memory or estrogen disrupts memory and how women perform relative to men. Overman (2004) found that men outperformed women on an executive function task. Thus, the purpose of this study is to determine whether women during their luteal phase, when progesterone levels are high, perform similarly to men on an executive function task, compared to women in other phases, and women on oral contraceptives (who do not experience estrogen or progesterone spikes).

17

Phenotypic Characterization of an mgtE Magnesium Transporter Mutation in Bacillus subtilis

Sarah Danielle Wuerfele

Mentor: Andrew Herbig, Biology

WTE

Magnesium (Mg) is the most abundant divalent cation in living cells and plays structural and biochemical roles in many cell processes. Although the importance of Mg as a cellular nutrient has been well established, the process by which organisms obtain Mg from their environment is still unclear. We study the Gram-positive bacterium *Bacillus subtilis* as a model system to understand Mg uptake and utilization in bacteria. The *B.subtilis* genome codes for several transporters believed to transport Mg into the cell. One of these genes codes for a member of the MgtE family of Mg transporters. In this study, we describe results of experiments designed to characterize the role of MgtE in Mg homeostasis in *B. subitlis*. A DmgtE strain exhibits a growth defect in low Mg minimal medium, consistent with a role of MgtE in Mg transport. The mgtE mutant also fails to grow as well as the isogenic wild-type strain at elevated growth temperature (50^{o}C), indicating that a functioning MgtE transporter contributes to the heat shock response in this organism.

18

Role of Anxiety on the Recognition of Fear on Women and Men Faces

Ivonne N. Cozad

Mentor: Joanne Altman, Psychology

WTE

This study investigated the effect of anxiety on one's ability to recognize different degrees of fear in people. College students completed the PANAS mood test and the Mood and Anxiety Symptom Questionnaire 26-Item version, to determine current and general states of anxiety, respectively. Anxiety was produced in half of the participants by having them read the instructions aloud in front of a video-camera. Then participants ranked 8 photographs on how much fear they showed. The photographs varied in sex and amount of fear present on the face . The hypothesis, that people would rank even the more subtle expressions of fear as fearful after being primed to feel anxious, was not supported. However women recognized the more subtle fear expression in the men's photograph while man only recognized partial fear when it was found in the top half of the face.

19

Molecular Cloning and Analysis of Putative Telomerase Gene Fragments from Naegleria gruberi

Kevin D. Lorson and **Lei Zhu**
Mentor: John Mullican, Biology

WTE

For this research project we are attempting to locate the putative telomerase gene, encoding the DNA polymerase activity, within the *Naegleria gruberi* genome using degenerate PCR. *Naegleria* is an amoeba that undergoes many interesting processes such as developing flagella under stress, encysting under different environmental stresses, and undergoing a division process similar to mitosis called pro-mitosis. Telomerase is an enzyme that adds DNA sequence repeats to the ends of chromosomes, protecting the genome from loss of information during successive replication events. This study was designed to investigate whether or not *Naegleria gruberi* has the gene that codes for the protein component of telomerase to help us understand the organism and its replication/gene repair process better.

20

Attractiveness and Intelligence: Do Pretty People Sound Smart?

Samantha L. Wright
Mentor: Michael Russell, Psychology

WTE

Often times, individuals are biased when they judge other individuals. It has been found, for example, that people often look at an individual and judge intelligence based on their attractiveness (referred to as the halo effect). More specifically, attractiveness and intelligence have been found to be positively correlated. Unlike previous studies, the current study examined the relationship between attractiveness and intelligence using dynamic rather than static stimuli. Participants were assigned to one of four conditions: video with sound, video without sound, sound only, and a still photograph. After exposure to an individual, participants were required to judge that person's intelligence and attractiveness. The results will be used to examine whether attractive individuals are perceived as more intelligent in each of the four conditions, or if it is a combination of visual and audio that makes an individual appear more attractive and in turn more intelligent.

21

Molecular Cloning and Sequence Analysis of a Potassium Two-Pore Channel (K2P) Gene From Naegleria gruberi, EG-B strain

Danielle Horton
Mentor: John Mullican, Biology

Potassium channels control the flow of potassium ions across membranes and play important roles in various types of cells in nearly all organisms. Studies in plants and animals have shown that K2P proteins are sensitive to environmental changes including pH, oxygen, and certain nutrients. The amoebae genus, *Naegleria*, respond to their environment by transforming into

either flagellates or cysts during changes such as those previously mentioned. A cloned portion of the N. gruberi K2P gene was confirmed by DNA sequence analysis. We present a strategy for cloning the cDNA of the entire gene-coding region for use in expression studies. Expression of the *Naegleria* K2P protein in mammalian cell lines lacking potassium channels will permit an analysis of its sensitivity in different environments.

22

Visual Adaptations of Night- and Day-Active Insects
Elizabeth Hinton and **Lisa A. Ille**
Mentor: Ursula Jander, Biology

A common problem found in the compound eye of an insect involves the structure of the individual eyes, or ommatidia, that compose the eye. In order to optimize vision, each insect has its own adaptations in balancing light intensity and resolution. We dissected the eyes of larval stages of praying mantes and crickets and compared the size and number of the ommatidia making up each compound eye. We found that the day-active mantis has numerous ommatidia which provide a high resolution. This works in their favor as they require a high accuracy in catching prey. Since mantes are diurnal, they can afford to have a greater number of ommatidia at a smaller size. On the other hand, the cricket, being a night-active insect, has fewer ommatidia at a larger size that allow it to capture more light. This optical adaptation works well for the cricket since it is an herbivore and does have the need for the resolution seen in the mantis.

23

Detection of AmpC Beta-Lactamase Genes in Enteric Isolates Using Multiplex PCR
Jennifer D. Connell
Mentor: John Mullican, Biology *WTE*

Both communicable and nosocomial infections involving ampC Beta-lactamase producing bacteria are becoming more prevalent in the United States. Bacterial ampC Beta-lactamase genes may be plasmid-mediated, which can enhance spreading of these genes between bacteria, thereby increasing the prevalence of infections that are difficult to treat. A key step in limiting the damage done by these bacteria is the development of efficient isolation and analysis techniques, as more knowledge of these bacteria may be acquired at a quicker rate. Multiplex PCR is one technique which, when completed correctly, can yield a lot of results at once. Six control *E. coli* strains, each containing a different beta-lactamase resistance gene, were obtained from Dr. Nancy Hanson (Creighton University), to optimize the multiplex PCRs. Bacteria from human samples were subjected to the multiplex PCR using primers of the six control genes to see if beta-lactamase genes were present.

24

The Effects of Ethical Disturbance Levels on Moral Judgments

Jacinda L. Peltz

Mentor: Michael Russell, Psychology

WTE

Previous research has shown that individuals are more likely to engage in relatively low levels of moral and legal violations than higher levels. Additional research has revealed that the more disturbing a legal or moral violation, the less likely individuals are to engage in that behavior. The current study is concerned with the ethical disturbance levels individuals have when witnessing other people engage in various moral and legal violations. The hypotheses are (1) that participants' ethical disturbance levels will be higher on the least severe scenario when presented with a more extreme scenario first, and (2) that participants will have a higher disturbance level when people, not property, are directly involved. Participants were asked to complete a survey about different situations and to rate their ethical disturbance levels on a scale of 1-5. The findings of the study will be discussed in terms of the relationship between ethical disturbance levels and judgments of morality.

25

The Effect of 24 Hour Sleep Deprivation on Decision Making, Mood and Memory in College Students

Kevin P. Martensongoetz

Mentor: Joanne Altman, Psychology

WTE

Research has demonstrated that sleep deprivation can lead to decreases in analytic reasoning skills, mood, and memory. However, sleep deprivation may also interfere with a cognitive task that is decision making. There is, as yet, no research to demonstrate the potential effect of sleep deprivation on decision making in college students. Therefore this study investigated the effects of just 24 hour sleep deprivation on decision making skills, as well as mood and memory, in sleep deprived and non-sleep deprived students. Participants completed a memory task, mood test, and executive function task at 7:30pm, 11:30pm and 8:00am. Half the participants stayed awake all night and half returned home to sleep. The results will be discussed in terms of performance over time with and without sleep.

26

Genetic and Morphological Identification of Free-Living Amoeboflagellates from Freshwater Sources in Kansas

Allison C. McKinley and **Trent B. Snyder**

Mentor: John Mullican, Biology

WTE

N. fowleri is a ubiquitous free-living thermotolerant amoeboflagellate known to be the causative agent of primary amoebic meningoencephalitis (PAM), a rare but almost fatal disease of the central nervous system. Diagnosed incidences of PAM have been reported in the border states of

Missouri and Oklahoma, but not in Kansas. Detection of N. fowleri in Kansas would suggest that individuals are potentially at risk of acquiring PAM. To determine whether *N. fowleri* exists in Kansas, water samples from five different fresh water reservoirs were obtained. These samples yielded a total of 122 amoeba isolates, 83 of which were found to be thermotolerant to 42oC. Testing for the presence of *N. fowleri* was accomplished through a variety of morphological characteristics and genetic testing. Seventy one percent (59/83) of the thermotolerant isolates were able to transform into flagellates. DNA samples of each isolate were then subjected to *N. fowleri*-specific PCR.

27

Nature or Nurture: Gender Difference in Mental Rotation Performance

Sanela Hasanovic-Little
Mentor: Michael McGuire, Psychology

Males perform better than females in Mental Rotation Tests. The gender generalization has been well supported by previous research. The current project reviews different causes of gender performance difference. Past research has brought forth the existence of gender differences (e.g., Alexander & Evardone, 2008; Parsons et al., 2004), established a role of age (e.g., Geiser, Lehmann, & Eid, 2008), testosterone (e.g., Hooven et al., 2004) and cognitive strategies (e.g., Hirnstein, Bayer, & Hausmann, 2009) on performance. However, Moè (2009) finds no difference in performance when gender beliefs are manipulated. A conclusion that male-female difference in MRT performance is caused by both, nature and nurture, can be derived based on the literature.

28

Proton Ionization of the Earth's Atmosphere due to Cosmic Ray Proton Events

Keith Robert Arkenberg
Mentor: Brian Thomas, Physics - Astronomy - Geology - Engineering

The Proton Ionization Computer Model (Proton-Atmo program) was designed to study ionization in the Earth's atmosphere due to cosmic ray (CR) proton events, such as supernovae and solar proton events. The model is based on research by C. H. Jackman, et al. (1980). The program uses a spectrum input of the imparting CR protons as a function of energy for an event. The program uses several integral formulas and parameters to model energy loss per layer of atmosphere and the resulting ionization at each layer. Currently the model is being tested for single energy values to reproduce published results of the Corsika model, another computer model. Future work will include verifying the model's output by reproducing measured ionization under normal atmospheric conditions. After testing is completed, spectral input using published observational data will be applied to compute the effects of nearby supernovae and other events on Earth's atmosphere.

29

AFLP Marker Profiling and Fluorescent Genomic in situ Hybridization of Perennial Wheat Amphiploids

David D. Beaver
Mentor: Matthew Arterburn, Biology

WTE

Perennial wheat has increased tolerances for salinity, nutrient deficiency and drought; their superior root masses help prevent soil erosion. Hybrid lines are created by crossing annual wheat with wheatgrass which generates amphiploid offspring. These hybrid plants have the perenniality of the wheatgrass, but acquire depressed agronomic traits from linkage drag. The goal of perennial wheat breeding is to optimize agronomic potential while maintaining perenniality. We have characterized several hybrid lines, of which the offspring have different qualitative traits. The goal of this project is to generate segregating hybrid offspring to be used in QTL analysis of agronomic traits using AFLP markers. Through marker analysis, we can assign the relevant loci to specific chromosomes. We employ FGISH to verify meiotic pairing in the hybrids, which is critical to ensure that the offspring are karyotypically stable and generate sufficient crossover, allowing for sufficient mapping resolution.

30

Sex Education Among Rural High School Females

Kylie Brooke Wiscombe
Mentor: Patricia Joyce, School of Nursing

The lack of knowledge about contraception and sexually transmitted diseases (STD's) hinders the ability for female high school students to make educated decisions about sex. According to the Centers of Disease Control, "at least one in four teenage American girls has a sexually transmitted disease." This project focused on presenting education about sexually transmitted diseases and contraception with the intent that freshmen high school females would then be equipped with enough knowledge and education to make educated decisions about sexual activity. A power point presentation was presented to the high school females at Mission Valley High School that included basic information on signs and symptoms, treatment, and prevention of common STD's. The power point also included information on abstinence and contraception and was presented in such a way that would empower the females to care enough for their self to elude risky sexual practices and behavior.

31

The Initiation of Nursing-care Focused Sibling Classes in NIC

Erin E. Carpenter
Mentor: Marilyn Masterson, School of Nursing

WTE

A sibling class was initiated at a local hospital to provide information on the nursing care babies receive in the neonatal intensive care (NIC) unit. The purpose of the class was to help decrease siblings' anxiety and fears towards the unit and/or hospital; as well as, informing the siblings of

what medical instruments were being used in their brother's and/or sister's care. Feedback from parent evaluations were all found to be very positive, stating they found the class helpful to both the children and themselves in explaining the baby's nursing care to the children. In conclusion, it is important to have NIC nursing-care classes for siblings to not only help explain those things that parents cannot, but to help reduce the stress on NIC families.

32

The Financial Analysis of AT&T

Joshua C. Carver, Elizabeth M. Damman, and **Delaney Danielle Gordon**
Mentor: Gary Baker, School of Business

We will be evaluating the industry of data, communication, and wireless services by comparing and contrasting the market shares of 3 companies which include: AT&T Wireless, Verizon Wireless, and Sprint-Nextel. We will be doing a presentation specific to the company of AT&T, and compare the information gathered to its other two market competitors. To present our findings on this market we will do a financial analysis of the company using its stock, Income Statement and Balance Sheet. Also, we will be forecasting these measures for the upcoming years and provide our insight of whether or not to recommend this stock to an investor using common investment formulas and computations. Since we will have initially researched this information on two other companies within the same industry, we will be able to verbally compare our presented results to Verizon and Sprint.

33

Rates of Solvent-free Wittig Reactions by Infrared Spectroscopy

Corey P. McCart
Mentor: Stephen Angel, Chemistry

WTE

Fourier transform infrared (FTIR) spectroscopy is used to follow the reaction dynamics of a solvent-free Wittig reaction between 4-bromobenzaldehyde and carboethoxymethylene triphenylphosphorane in the production of (*E*)-ethyl 3-(4-bromophenyl)acrylate and triphenyl phosphonium oxide as a byproduct. Infrared (IR) absorptions unique to each reactant and product are identified and used to determine relative transient amounts of these chemicals. Solid-state models of reaction kinetics are used to fit the IR absorption decay of the reactants and absorption increase of the desired product. Factors contributing to solvent-free reaction decay and facility of product formations are identified.

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