Table of Contents

April 13, 2012
Cartwright Center

8:30 a.m.-1:30 p.m.

Schedule of Oral Presentations……. 3

Undergraduate Student Abstracts

Poster Presentation Abstracts……. 6

Oral Presentation Abstracts……..……. 34

Exhibit Presentation Abstracts……..……. 42

Graduate Student Abstracts

Poster Presentation Abstracts……..…….. 46

Oral Presentation Abstracts……. 58

2011 Recipients of Undergraduate Grants……. 59

2011 Recipients of Graduate Grants .....…… 63

Recognition and Awards..... 65

Undergraduate Research Committee Members…… 66

Graduate Council Members…… 66

Index…… 67

Dear Friends:

We're pleased that the University of Wisconsin-La Crosse is holding its Fifteenth Annual Celebration of Student Research and Creativity on April 13, 2012. UW-La Crosse takes great pride in providing its undergraduate and graduate students opportunities to engage in faculty mentored research and creativity in diverse academic disciplines. Celebration is a time to publicly acknowledge and congratulate all student scholars and their faculty mentors for their scholarly contributions. As a Teacher-Scholar, I know full well that every abstract in this publication represents serious commitment and hard work on the part of its authors, and they deserve our appreciation for their willingness to share with the UW-La Crosse community.

While research methodology may differ among disciplines; for example designing and conducting experiments; doing computational simulations; pursuing fieldwork and/or creating a work of art, our students are the direct beneficiaries of these distinct learning opportunities through the pursuit of scholarly activities under the guidance of their mentors. UW-L is committed to all forms of research methodologies and is pleased to provide student grants to a number of scholars each year. It is also worth noting that our student grants have been continually supported by the Academic Initiative program for which students pay a differential tuition. The recipients of these grants in 2011 are acknowledged in this publication, and we congratulate all of them.

I am equally pleased to express my deep appreciation to the members of the Office of Undergraduate Research & Creativity, the Undergraduate Research and Creativity Committee (URCC) and the Graduate Council for their assistance in planning this publication and the magnificent event.

You may recall that we were the proud host of the National Conference on Undergraduate Research (NCUR) at UW-L in 2009 which was, in part, due to our longstanding commitment to student engagement in research and academic excellence. This year, 29 undergraduate students represented UW-L at the 2012 National Conference on Undergraduate Research in Ogden, UT joined by over 300 students from our sister institutions in the UW-System and beyond on two charter flights just for NCUR. We were asked to host NCUR here again in 2013, and are already making plans to bring 3000 undergraduate researchers to campus from across the country next April.

In closing, let me congratulate the student scholars and faculty mentors once again for their hard work and dedication leading to the projects included in the 2012 Celebration of Student Research and Creativity.

Best wishes,

Joe Gow

Joe Gow
Chancellor

	326 Cartwright Center	330 Cartwright Center	332 Cartwright Center	331 Cartwright Center
8:30 to 8:50	**UR.1 Sean Mobley** Communication Studies All-American Man of Steel: The Superman Radio Show and the Japanese during World War II	**UR.2 Ethan Rogers** Sociology Substance Use and Risky Sexual Behavior among High School Students: A Partial Test of the Ecological Risk Factor Model	**GRAD.1 Alissa Ganser** Biology: Aquatic Sciences Potential lethal and sublethal effects of climate change on juvenile freshwater mussels: Studies on survival, growth and physiology	**UR.24 Mary Heisel** Education and Mathematics Investigating Achievement Gaps in Mathematics
8:55 to 9:15	**UR.3 Sara Erickson** Geography and Biology Measuring the spatial distribution of lead contaminants in the La Crosse River Marsh	**UR.4 Sarah Sodemann** Archaeology Early Hominin Evolution and the Transition to Bipedal Locomotion in Humans	**UR.5 John Nehls** Physics Characterization of the Performance of Quantum Dot, Optically Gated, Field-Effect Transistor Single-Photon Detectors as a function of Operating Temperature and Detection Rate	
9:20 to 9:40	**UR.6 Christopher Lynum** Biology-Aquatic Science Land snail community diversity in the Driftless region of Wisconsin	**UR.7 Angela Rooker** Archaeology/Spanish The Effect of Migrant Experiences in the United States on Family Dynamics in Mexico	**UR.8 Briana Tong** Psychology What is eating you?: Food consumption among students in relation to stress, anxiety, depression, and coping skills.	
9:45 to 10:05	**UR.9 Jim McDermott** Chemistry Structure function differentiation of Hemolysin A beta-edge variants using multi-angle light scattering	**UR.10 Bryan Zinschlag** Sociology The World Is Yours: Undergraduates, New Freedom & Social Agency	**UR.11 Yang Cha Thao** Therapeutic Recreation Understanding Hmong Culture, Recreation, and Leisure Activities to Provide Quality Care Services	

10:10 to 10:30	**UR.12 Matt Nighbor** Finance A Practical Application to Relative Strength	**UR.13 Janet Yearous** French/Education French in the Face of Arabization: Language Attitudes Among High School Students in Rabat	**UR.14 Austin MacKenzie** Psychology Describing Dwight: Examining Levels of Abstraction in Written and Spoken Language	
10:35 to 10:55	**UR.15 Donica Spence** Biology Sexually Explicit Lyrics and their Influence on Jamaican Adolescents' Perceptions and Attitudes about Sex	**UR.16 Simon Payne** Archaeology Greeks in Ptolemaic Egypt: Inter-cultural Influences in Naukratis	**UR.17 Andrea Turtenwald** Sociology Physical Intimacy and Equity in the Maintenance of College Students' Romantic Relationships	
11:00 to 11:20	**UR.18 Greta Foley** Biology Abnormal Production of CD43 in Lung Cancer	**UR.19 Mitchell Johnson** Archaeology Utilizing a Private Collection to Explain the Variation Present in Turn of the Century Wrenches, Spark Plugs, and Corn Huskers	**UR.20 Karyn Cecele** Health Education and Health Promotion Student Perceptions of LGBT Safety in Rural Wisconsin High Schools	
11:25 to 11:45	**UR.21 Julius Starlin** Mathematics Education Misconceptions and Difficulties in College Algebra	**UR.22 Erin DuBois** Archaeology An Examination of the Change in Anglo-Saxon Barrow Burial Use	**UR.23 Megan Clark** History The Nature of Society: A cultural survey of Devil's Lake settlement 1870 - 1900	
11:50 to 12:10		**UR.25 Mitchell Running** Archaeology Nubian A-Group and Egyptian Trade Relations in the Predynastic	**UR.26 Sean Mobley** Communication Studies/History Mr. Bojangles: The Tap Man	

UNDERGRADUATE STUDENT ABSTRACTS

Poster Session A
Valhalla Hall: 9:00am-10:45am

U.1 AN EXAMINATION OF THE EFFECTS OF MEDITERANEAN IMPORTS ON CELTIC SOCIAL STRUCTURE THROUGH CEMETARY ANALYSIS

Chad Heemstra
Advisor: David Anderson, Sociology and Archaeology

Abstract. This paper provides a look at the effects of Mediterranean imports on Celtic society through an investigation of cemetery analysis. These imports are known as prestige goods, which were used by the Celtic elite to demonstrate their power and authority and can be readily identified in Celtic burial context. Due to the absence of other archaeological correlates, it is the burials that provide the most information on Celtic society. During the Late Hallstatt D period, elite control of trade networks that provided these prestige goods shifted, causing the development of a new Celtic culture known as the La Tene. By comparing the fluctuations of these imports from the Late Hallstatt D period to the Early La Tene A period, the ability to identify how these trade networks changed is uncovered. In addition, an examination of the changes in burial practices from the Late Hallstatt D period to the Early La Tene A is analyzed. This analysis, and the possible correlation between the fluctuations of imports and burial practices is discussed in the paper and has allowed the ability to discuss the effects of Mediterranean imports on Celtic society in the following sections.

U.2 An Analysis of Ceremonial Architecture in the Peruvian Highlands

Kate Norgon
Advisor: Timothy McAndrews, Sociology and Archaeology

Abstract. This study explores ceremonial architecture at the site of Hualcayan in the highland Ancash region of Peru, comparing it with other sites in the region to determine what characteristics they share and what these characteristics mean in terms of regional consistency. Hualcayan had a long occupational timeline but this study specifically analyzes its occupation during the Early Horizon Period, 900-200 B.C.E., when this region was influenced by the widespread Chavín tradition. The most prominent features of this site are two mounds as well as a sunken circular court and a network of canals, elements which are present in many sites of this period. By comparing Hualcayan to the sites of Tumshukayko and Chavín de Huantar in the Ancash region the degree to which ceremonial and ritual architecture was regionally consistent is evaluated. In addition, regional consistency in the ceremonial architecture serves as evidence of consistency in ideological and religious beliefs throughout the region.

U.3 Strategic Middlemen: Monongahela, Mohawk and Meskwaki Settlements

Emma Bremer
Advisor: Constance Arzigian

Abstract. North America was home to a vast set of trade networks both prehistorically and historically. In several instances key passages within these networks were controlled by societies who acted as middlemen. This position allowed them to command great power and wealth, which created tension with their neighbors and trade partners. This study examines how the Monongahela of the upper Ohio River valley (A.D. 1100-1635), the Mohawk of the Mohawk valley (A.D. 1525-1776), and the Meskwaki of the Fox River Passage (A.D. 1665-1730) settled within their territories and how these decisions may have reflected considerations including subsistence, control of routes, and defense. Preliminary research suggests that middleman groups generally chose locations that optimized all three variables, but that priorities changed through time.

U.4 Archaeological Field Work in Sanisera, Spain on a Roman City and Necropolis

Author Alesha Klein
Advisor: Timothy McAndrews, Sociology and Archaeology

Abstract. This study is the analysis of the material remains found at two excavation sites, a Roman City and a Roman Necropolis. The archaeological site is at the Cape de Cavalleria in Sanisera de Menorca, Spain. The excavations will specifically look at burials in the Roman Necropolis and a basilica in a Roman City. The main objective of the Necropolis dig is to give the demographics of the population of Sanisera with their age, sex, disease, diet, etc. The Roman City objective is to help understand the Roman's day to day lives and the importance of the city through the basilica. The overall goals of the Sanisera project are to study the life of the Romans on the island of Menorca, their interplay with the indigenous culture, and how the Balearic Islands fit into the Roman Empire.

U.5 Effects of hibernation on the enteric nervous system of the thirteen-lined ground squirrels.

Lauren Eliades and Martin Erlandson
Advisors: Sumei Liu and Scott Cooper, Biology

Abstract. The enteric nervous system is the intrinsic control of the digestive function. The aim of the present study is to investigate the adaptive changes in the enteric nervous system during hibernation that may help maintain the integrity of the gut and the low level activities of the digestive system. Method: Five hibernating and five non-hibernating ground squirrels will be used in the study. Immunofluorescence staining will be used to examine the changes in neurochemical codes in the enteric nervous system. Cell counts will be carried out to examine possible changes in the numbers of cell bodies immunoreactive to specific neurochemical markers for the enteric nervous system. Results: There was no quantitative change in the total number of neurons in the myenteric and submucosal plexus during hibernation. In non-hibernating animals, there were 22.26 ± 2.17 neurons/ganglion in the myenteric plexus and 6.58 ± 0.57 neurons/ganglion in the submucosal plexus. In hibernating animals, there were 26.84 ± 2.83 neurons/ ganglion in the myenteric plexus ($P > 0.05$, $n = 5$) and 5.89 ± 0.93 neurons/ganglion in the submucosal plexus ($P > 0.05$, $n = 5$). We also observed choline acetytransferase, a marker for cholinergic neurons, in three pairs of animals and no significant difference was found between hibernating and non-hibernating animals. Conclusion: Hibernation does not change the total number of neurons in the enteric nervous system. However, whether it will cause selective up- or down-regulation of certain neurotransmitters in the enteric nervous system will require further investigation. /

U.6 Screening Potential Anthelmintic Compounds for Novel Activity

Megan Gross
Advisor: Jennifer Miskowski, Biology

Abstract. Parasitic worms, called helminths, infect plants, animals, and humans worldwide leading to a decreased food supply, economic hardship, and significant levels of morbidity and mortality. Anthelmintics are drugs used to treat helminth infections, and the misuse of these pharmaceuticals has contributed to widespread anthelmintic resistance in worms that infect livestock and emerging drug resistance in human-infecting helminths. The identification of new means to target helminths is imperative. The non-parasitic nematode Caenorhabditis elegans has long been a model system for helminths. Previously, our group screened a series of novel, synthetic compounds for anthelmintic activity in C. elegans using two assays. These compounds are derivatives of a natural product stilbene that have generated great interest due to their broad anti-microbial effects. Six compounds demonstrated significant anthelmintic activity and will be further investigated. This research project aims to determine if these derivatives act via a novel mechanism. To this end, C. elegans mutants that are resistant to current anthelmintics will be exposed to each of our six unique derivatives and observed for developmental problems or death. The data from these assays, combined with the potency of each compound, will be used to prioritize one compound for further study.

U.7 Analyzing hi-copy suppression of CDC7 mutations in Saccharomyces cerevisiae meiosis by DBF4

Adam Bradley
Advisor: Anne Galbraith, Biology

Abstract. The CDC7 gene is necessary for yeast to undergo both meiosis and mitosis; a mutation in this gene is lethal for the organism. However, it has been found that a temperature-sensitive mutation will allow cells to remain viable at low temperatures while allowing the mutant phenotype to be studied by raising the temperature. The temperature-sensitive cdc7-1 allele has been thoroughly researched in order to determine its mitotic phenotype. It has also been studied in Dr. Galbraith's lab to determine its effects on meiosis. It has been shown that high-copy DBF4 suppresses the mutant phenotype of the cdc7-1 mutation in both mitosis and meiosis, supporting a hypothesis that the Cdc7 and Dfb4 proteins interact in both meiosis and mitosis. Three other temperature sensitive alleles of the CDC7 gene also exist and we have constructed cdc7-3 and cdc7-7 strains in the lab. These alleles contain different mutations from cdc7-1 and from each other but their phenotypes have not been examined carefully in meiosis. I studied the ability of high-copy DBF4 to suppress the cdc7-3 and cdc7-7 alleles in meiosis. I transformed the cdc7-3 and cdc7-7 strains with three different plasmids: vector (negative control), high-copy CDC7 (positive control), and high-copy DBF4 (experiment) for a total of six different strains. I then examined the ability of these six strains to complete meiosis properly at both the low temperature that should allow meiosis in all the strains, and the higher temperature that has been shown to affect meiosis in the cdc7-1 strain. The results of these studies will be presented.

U.8 Quantitative Assessment of American Chestnut Tree Health

Benjamin Axell
Advisor: Anita Baines, Biology

Abstract. Populations of the American chestnut tree, Castanea dentate, are being affected greatly by a fungal pathogen. Research is currently being done by Dr. Anita Baines in regards to controlling this pathogen. A desired aspect of this research is attaining quantitative data in regards to the health of American chestnut trees over time. Gap Light Analyzer is software that analyzes the intensity of light passing through canopies of trees. The units derived from this program allow for quantitative analysis to be done on the canopy fullness of chestnut trees as a measure of relative health and fitness. The utilization of this technology to generate valuable quantitative data for study such as this could lead to new standards and methods for evaluating tree health in many different systems.

U.9 Investigating the role of host competition in the transmission of waterfowl disease in the upper Mississippi River

Matthew Rittenhouse and Maria Jansen
Advisors: Gregory Sandland, Roger Haro (Biology), James Peirce, Barbara Bennie (Mathematics)

Abstract. Introduction of the aquatic snail, *Bithynia tentaculata*, into the upper Mississippi River (UMR) has had negative impacts on native wildlife in the region. One of the key reasons for this is that B. tentaculata transmits two parasite species to migrating waterfowl which leads to thousands of bird deaths annually. Although the invader and its parasites are adversely affecting the biota and economics of the UMR, little is actually known about the dynamics of disease in this system. We have utilized a combination of theoretical and empirical approaches to gain a better understanding of parasite transmission in the UMR. From a theoretical standpoint, we expanded the classic SIR model to include parameters which take into account intraspecific competition between infected and uninfected B. tentaculata. Experiments were then developed to specifically ascertain values for the parameters introduced into our model. Results from this expanded model suggest that intraspecific interactions between infected and uninfected B. tentaculata can influence the persistence and spread of waterfowl disease in the UMR. The consequences of these results for disease management in the UMR will be discussed.

U.10 Compensation Responses in Silver Maples to White-tailed Deer Herbivory in the Upper Mississippi River Floodplain Forest: A Quantitative Study

Andrew Voelkel
Advisor: Meredith Thomsen, Biology

Abstract. Canopy disturbances are a main driving force in creating a forest succession mosaic in the Upper Mississippi River System (UMRS). Early succession patches resulting from disturbances will either develop into a forest similar to the one that was lost, a forest with a different mix of species, or another community type, such as a grassland. Which community ultimately colonizes disturbed patches is mainly determined by inundation from seasonal floods and herbivory from large mammals in the UMRS. Plant responses to flooding and herbivory are well researched independently, but the effects of flood conditions on tree compensation to herbivory is understudied. To simulate herbivory at various levels of flood intensity, Silver maple (Acer saccharinum) saplings across an elevation gradient in the UMRS floodplain were clipped to simulate White-tailed deer herbivory. Data from clippings from early (June), middle (July), and late (August) in the 2011 growing season show that clipped trees had lower growth rates and increased numbers of shoots and leaves. Furthermore, elevation was correlated with tree compensation due to increased flood duration and intensity at lower elevations. An analogous study planed for January 2012 will study winter herbivory and provide a more comprehensive understanding of the interaction of flooding and herbivory as flood intensity, herbivory intensity, and resource allocation to browsed biomass varies seasonally.

U.11 Reliability of proximal and distal tibial thickness measurements from sagittal and front plane radiographs

Tim Naegle, Tiffany Draeving, Chase Hanson, Nicole Schmeichel
Advisor: Dr. Robert Ragan, Dr. Thomas Kernozek, Stacey Meardon, Biomechanics

Abstract. Stress fractures are common injuries to many athletes, especially runners. These injuries are thought to be due to a combination of repetitive mechanical loading, remodeling, and micro damage to bone tissue. Bone thickness and loading seem to be important to these injuries. Our goal was to measure the reliability of cortical thickness at two different locations on the tibia from radiographic images. Thirteen healthy college age students were examined. Two x-rays, one of the sagittal view and one of the frontal view were measured by four independent examiners. The tibia length was measured from the tibia plateau to the joint line between the malleolous and the tibia on each x-ray. The length of the tibia was measured and recorded in millimeters. This length was then divided into thirds. Measurements of the tibia's diameter were then taken at the proximal third of the tibia length and distal third of the tibia length from tibia plateau. Both interior (medullary cavity) and exterior (periosteum) diameter were measured at each location on the tibia. A quarter was placed in the field of view for scaling. Intraclass correlation coefficients were used to determine the reliability of cortical thickness from each view. Reliability coefficients were slightly better for distal tibial measures from the front or side view (ICC=.94-.95) than the proximal tibial measures (ICC=.91-.93). Radiographic measures from different examiners seem to be a reliable estimate of distal or proximal thickness. Standard error values range between (.9 - .5 mm) depending on location and view.

U.12 Comparison of Clinical Veterinary Practice in Masaya, Nicaragua and La Crosse, WI
Rebecca Schneider
Advisor: Meredith Thomsen, Biology

Abstract. International clinical experiences provide opportunities for pre-medical students to gain broader perspectives on their medical fields of study. The hands-on experience I gained during a J-term trip, combined with previous job shadowing experiences, allowed me to compare the clinical veterinary practices between Masaya, Nicaragua and La Crosse, WI. Using a published case study as a model, I compared the examination and recovery facilities, surgical performance and sterile techniques used in the two clinics. Veterinary clinical procedures such as physical exams, surgery, and recovery in an impoverished Nicaraguan community were significantly different from the aseptic practices of a La Crosse veterinary clinic. Field clinics in Masaya, were set-up daily in local schools, where pets were examined and treated all in one large room. Typical clinics in La Crosse have separate rooms in which procedures are performed, along with holding facilities. In Nicaragua, spays and neuters were performed by the volunteer pre-veterinary students alongside certified veterinarians, however, surgeries in La Crosse are only performed by a licensed veterinarian. Sterile techniques were carried out to the extent in Nicaragua, but surgeries sometimes took place next to open windows and only soap and water were used to clean surgical instruments. In La Crosse, all surgical spaces and instruments are routinely sterilized. Performing a community assessment of small animal treatment taught me about the resources, conditions, and efforts involved in solving the pet overpopulation issue. Through this J-term trip, I also gained a better appreciation for the cultural differences that can ultimately shape the way pets are cared and treated for, along with clinical skills that are needed in veterinary practice. The international clinic experience was made possible through the nonprofit organization, Volunteers for Intercultural and Definitive Adventures (VIDA) program.

U.13 Use of Vocalization Playbacks to Detect Owls in the La Crosse County Area
Melanie Schmidt and David Matthew Hecht
Advisor: Rob Tyser, Biology

Abstract. Though several species of owls are known to exist in and adjacent to La Crosse County, the relative abundance and specific habitat associations of owls in this area are not well known. In this study, we used evening/night playback vocalization calls of four species of owls (Long-Eared, Northern Saw-Whet, Eastern Screech, and Barred) to determine their relative abundance in urban versus rural areas of La Crosse County. In addition, we sought to establish whether repeated playbacks of the same species would increase the likelihood of observing that particular species. Variable patterns of playback vocalizations were broadcast at 25 urban and 26 rural sample points each week over a 6-week period and all vocal/visual responses were recorded. Preliminary results indicate that barred owls are the most frequently observed species, and are more likely to be found along the edge of the city and in rural, rather than urban, habitats.

U.14 What's in the water: Spatial vs. environmental determinants of zooplankton community composition.
Ryan Moncada, Natalie Reneir, Karali Fedor.
Advisors: Kris Rolfaus (Chemistry) and Gretchen Gerrish (Biology)

Abstract. Zooplankton play a vital role in freshwater ecosystems by feeding on organic matter and providing nutrients for organisms in upper tropic levels that consume them. Spatial and temporal variation in physical, chemical, and biological characteristics among aquatic habitats can result in significant variation in the plankton community. The primary goal of this investigation was to evaluate zooplankton relative abundance and diversity in 25 lakes located within five upper Midwestern National Parks in May/June 2011. Zooplankton were taxonomically identified to species level in order to assess if relationships existed between species diversity, relative abundance, and the physical characteristics of each ecosystem.

U.15 NACURH-Member Organizational Identification: A Close Look at a Virtual Organization
Kelsie Bolz
Advisor: Dan Modaff, Communication Studies

Abstract. Virtual organizations use computer-mediated communication as their main, if not only, source of interaction between organizational members. Virtual communication does not include some of the most important forms of communication: nonverbals. Despite the challenge, NACURH, a student-run organization that participates virtually, appears to have high levels of organizational identification with its members. This research will delve reasons behind high/low levels of NACURH-member organizational identification through surveys and interviews and will discuss what other organizations can do to communicate efficiently with their members.

U.16 Just a Text Away: Texting and Parent-Child Relationships during the College Transition

Aiyana Bloome
Advisor: Dena Huisman, Communication Studies

Abstract. The purpose of this study was to determine how text messaging between parents and first-year college students impacts communication and relational maintenance in parent-child relationships during the college transition process. As text messaging becomes more pervasive in our lives, it is necessary to research the ways it is affecting different areas, such as within the parent-child relationship. As a fairly new communication medium, text messaging is changing the ways messages are sent and received. It is worthwhile to find out whether the parent-child relationship has suffered or benefited from this phenomenon, especially since parents' behaviors and communication have an effect on how their child transitions into college life. The research sought to determine whether text messaging has been beneficial or detrimental in maintaining the parent-child relationship as well as if text messaging facilitates a prolonged reliance by first-year college students on their parents. Qualitative interviews were conducted with twelve first-semester undergraduate students between 18 and 19 years of age, currently living separate from the parental home. After analyzing the data, four main themes emerged. According to reports by participants, texting makes it easier and more convenient to communicate with their parents, it supports everyday communication, it helps them to sustain the parent-child relationship, and it provides comfort and reassurance. Additionally, participants reported texting their parents for the following needs: to explain tasks, to provide emotional and material support, to give advice, and to help problem-solve.

U.17 The Implementation of Problem Specifications for Use in a Multi-Agent Machine Learning Framework

Cassandra Jens
Advisor: Robert Allen, Mathematics

Abstract. The fundamental laws which govern learning are yet to be discovered. The study of machine learning aims to define these laws and thus to engineer computer systems that automatically learn and improve by experience. A subset of machine learning known as multi-agent machine learning incorporates more than one agent to learn a traditionally difficult task. One model used for multi-agent machine learning research is known as the "decentralized partially observable Markov decision process", or Dec-POMDP. The Dec-POMDP is defined by a finite set of world states, a finite set of joint actions, a transition function, a reward function, a finite set of joint observations and an observation function. In essence, an agent is taught using rewards and observations in hopes that it will discover what is good behavior. Until recently the field of multi-agent machine learning lacked a common framework in which to define POMDPs, develop agents, run experiments, share results, and communicate knowledge. The machine learning group at UW-L filled this void by creating this common framework: an environment for multi-agent simulation, called EnMAS. The product of our research is a contribution to the EnMAS framework. We developed several problem descriptions for distribution and use with the EnMAS application. These problem descriptions will allow any researcher, student, instructor or machine learning enthusiast to open the EnMAS application and begin developing agents and learning algorithms without the need to create an already predefined problem domain. By implementing the most commonly used problem domains in multi-agent research for use in the EnMAS system, we have helped eliminate the need for redundant development of problem definitions in future multi-agent machine learning simulations.

U.18 Dual Language Learners

Pa Houa Vang
Advisors: Ann Epstein and Barb Gander

Abstract. Students who are Dual Language Learners (DLL) are slowly increasing in population, and it is important that teachers understand how to work effectively with these students. There are two types of Dual Language Learning students, the Simultaneous Bilingual and the Sequential Bilingual. The Simultaneous Bilingual students learn two languages starting from infancy. The Sequential Bilingual students are brought up with only one language at home and slowly build on another language as the first one is established. It is important that teachers include their students and help them become successful academically as well. The aim of this research was to investigate how teachers worked with Dual Language Learners and their families to help them be successful students. A portion of the research was done in Phoenix, AZ and the others were in surrounding La Crosse County areas. The research was done through face-to-face interviews and surveys provided by Qualtrics. This research is focused on the work done by teachers from Pre-K to fifth grade with DLL students.

U.19 An assessment of stress in female coaches: A qualitative study

Katie Vosters
Advisor: Emily Whitney, Health Education and Health Promotion

Abstract. Research has demonstrated that coaches experience stress because of the nature of their jobs. This job-related stress has also been shown to affect mental well-being and contribute to 'burn-out' of many talented coaches. However, little information is available specific to stress and female coaches. The purpose of this study was to identify stressors and their impact on the mental well-being of female basketball coaches. A case study approach was utilized to assess stress in female coaches. Nine coaches participated in this study, four from the Midwest and five from the West Coast. The major underlying causes of stress reported by the coaches were categorized into five different themes: player dynamics, time, parents of athletes, pressure to win, and gender roles. For example, within the gender roles category all of the participants stated that they felt increased levels of stress as a female coach due in part to the perception that male coaches received more respect for the same work from their peers and other officials. The implications of these findings suggest female coaches may have increased levels of stress due to pressures put on them from parents and communities to win and to help their athletes develop as individuals. Another driving factor was their constant struggle to balance coaching with their professional and personal lives. Current stress management techniques practiced by the coaches are also discussed, as well as what types of supports could be utilized to help the coaches manage their stress more effectively.

U.20 Quantifying the effects of exposure to different educational materials on the amount of collected post-consumer food waste for the UW-La Crosse Vermicomposting Program

Megan Bain
Advisor: Ryan Perroy, Geography & Earth Science

Abstract. As the UW-La Crosse vermicomposting program (which currently only accepts pre-consumer kitchen waste) ramps up to accept both pre- and post-consumer food waste, there is great interest in making sure that the education of the students is being done effectively. Different forms of media (Table tents, banners, posters and a video) will be compared to see which has the most impact.

U.21 Using X-Ray Fluorescence and Statistical Analysis to Quantify the Spatial Distribution of Lead Contamination

Cody Mertens
Advisor: Ryan Perroy, Geography & Earth Science

Abstract. This research will expand an existing study in the UW-L Geography department of lead contamination in the La Crosse River Marsh by analyzing additional depths of sediment (5-10 cm and 10-L5 cm) to create a three-dimensional model of lead contamination. Research methods will include a statistical spatial analysis of a subset of collected samples to determine the total number needed to process, sample processing in the UW-L Soils lab, on-campus heavy-metal content analysis via X-Ray Fluorescence, confirmation of results via external laboratory analysis, and creation of the three-dimensional model of contamination. This work will greatly increase our understanding of the spatial distribution of lead in the La Crosse River Marsh.

U.22 Behind the Scenes of StormTeam 8

Alexander Wegner
Advisor: Rafique Ahmed, Geography and Earth Science

Abstract. During the summer and fall semesters of 2011, I had the privilege of interning at WKBT News 8 as part of StormTeam 8. I primarily worked with Chief Meteorologist Cory Malles, but also had opportunities to work with the other StormTeam meteorologists, Bill Graul and Michelle Poedel. Over the course of my internship I was able to observe and participate in the various newscasts aired by WKBT. I also worked during severe weather events, and had the opportunity to meet and interact with all the on-air talent and behind the scenes workers. The internship began with learning how to use the Weather Central program, which is how each show is produced. From day one of the internship, I gained hands on experience with this program. After gaining enough experience, I transitioned to helping produce Cory's show. I would create the pinpoint forecast and update the basics of each graphic within the show, while he would build his forecast. Each day, I also prepared my own forecast to work on my forecasting skills. Later, I began working on the weather section of the La Crosse Tribune and Winona Daily News that StormTeam 8 and WKBT provide. This involved updating the forecast data, finding interesting pieces of "Did you know?" information, and finding weather data from the prior day. The final part of my internship had me producing my own show and presenting it on the chroma key (green screen). These segments were not aired, but were taped so Cory and I could review them together and look for places where I could improve and develop my skills. During this part of my internship I would also produce Cory's entire show. Cory would then look over the final product, and make any tweaks or minor personal preference changes he felt were necessary.

U.23 A Qualitative Study on Negotiating Physical Disability on a College Campus

Ryan Nell
Advisor: Jörg Vianden, Student Affairs and Administration in Higher Education

Abstract. This project informed students, faculty, and staff of three area post-secondary institutions about the challenges and barriers, as well as the positive experiences that students with physical disabilities face on those campuses. It is imperative to know how these students negotiate their disabilities while attending their respective universities. Interviews were conducted with four students attending these institutions who have physical disabilities. The interviews were completed using a modified version of the Critical Incident Technique (Flanagan, 1954), allowing students to freely express themselves regarding their campus experience, and the researcher to obtain the unique subjective data necessary for the success of this project. Findings indicate a general level of satisfaction regarding the institutions, with dissatisfaction occurring in regard to physical access. There are many obstacles college students with physical disabilities face in their journeys toward their degrees. With the data I gathered from this inquiry I hope to remove or diminish some of these barriers through education and awareness.

U.24 Mathematically Modeling the Sweet Spot of Baseball Bats

Ali Khalili
Advisor: Theodore Wendt, Mathematics

Abstract. The "sweet spot" is the spot on a baseball bat that, after ball-bat collision, effectively maximizes the trajectory of a batted ball and minimizes the discomfort of the batter. The purpose of this research is to determine the location of the sweet spot of a baseball bat mathematically as well as to analyze the sensitivity of the ball's trajectory with respect to vertical and lateral shifts of the collision point. The collision points on a bat that correspond to optimal performance as well as comfort are both key subjects of the study, but performance is examined with heavier emphasis. Various branches of Mathematics and Physics including Multivariate Calculus, Trigonometry, Linear Algebra and Classical Mechanics, are implemented to find the sweet spot. The basis for determining the spot on the bat that correlates to optimal trajectory were fundamental conservation laws of Physics, while comfort was modeled using the center of percussion of a bat. Results are compared with existing empirical data to verify the accuracy of the models. For a 32 inch maple bat, if the motion of the ball and the bat is parallel to the ground, the ball's most optimal trajectory occurs when hit approximately 5.66 inches from the end and .56 inches above the mid line. The results suggest that the trajectory is much more sensitive to vertical deviation than lateral deviations from the sweet spot. The spot that optimized comfort was found to be approximately 2.63 inches from the end. Overall, these results seem to be consistent with external experimental data.

U.25 Search for Antimicrobial Drugs in Hickory Nuts and Leaves

Kristin Zimmerman
Advisor: Mike Winfrey, Microbiology

Abstract. Many of the antimicrobial drugs relied upon in the past decades have become ineffective due to an increasing number of resistant microorganisms. This is why the search for new antimicrobials has become vital. This project focuses on the discovery of new antimicrobial drug(s) from natural sources, in particular, Shagbark Hickory nuts. Additional tests screened Shagbark Hickory leaves as well as Red Oak and Shumard Oak nuts and leaves. The Shagbark Hickory nuts and leaves both showed promise against Pseudomonas aeruginosa which is known for its great ability to develop resistance to the drugs used to treat it. The antimicrobial activity of the crude extract (before separation) showed the nuts with a Minimal Inhibitory Concentration (MIC) of 32 μg/ml against Pseudomonas aeruginosa but the leaves showed more activity with 16 μg/ml while the standard for a purified antimicrobial shows an MIC as low a 1-10 μg/ml. The separation of the compounds in the crude Shagbark Hickory extract was done using Thin Layer Chromatography. The polar bands in the Shagbark Hickory nut extract and the nonpolar bands in the Shagbark Hickory leaves showed the most activity. Further separation with different solvents led to a decrease in the activity in several Thin Layer Chromatography bands in the leaves for reasons which will be researched further. With additional separation, identification, and testing, the nuts and leaves of the Shagbark Hickory have the potential to yield an effective antimicrobial drug to fight the increase in resistant bacteria.

U.26 Recovery of HPIV-3 from an Infectious Clone

Sarah Helmer
Advisor: Michael Hoffman, Microbiology

Abstract. Human parainfluenza virus type 3 (HPIV-3) is a member of the order Mononegavirales, the family Paramyxoviridae, and the subfamily Paramyxovirinae. It is a non-segmented, enveloped, negative sense RNA virus which annually causes among children in the US around 1 million cases of lower respiratory tract infections, with 18-29 thousand of these causing hospitalizations. There are currently no effective antiviral treatments or vaccines for HPIV-3. The main goal of this research project as a whole is to identify viral and cellular constituents responsible for the assembly and release of the virus. Doing so could help provide targets for antiviral drug and vaccine development. One protein important in the assembly and release of HPIV-3 is the matrix (M) protein. To better understand the role of the M protein in these viral life cycle steps, we wanted to create a variant of HPIV-3 containing a Flag-tag on the M protein. The Flag-tag allows visualization (via immunofluorescence) of the M protein location in infected cells during assembly and release. To create this Flag-tagged variant of HPIV-3 an infectious clone, designated pHPIV3-Mf, containing a M protein gene modified with a Flag tag was used to recover virus. Currently, the HPIV-3-Mf virus particles are being used to ascertain the position of the M protein during the assembly and release stages of the viral life cycle. Another possible use for this virus will be to monitor the interaction of the M protein with host cell proteins, thus providing clues as to what host cell proteins are involved in infection.

U.28 Effects of Sampling Rate on Plantar Loading During Barefoot Walking

Chase Hanson, Tiffany Draeving, Tim Naegle, Emily Laube
Advisor: Tom Kernozek, Physical Therapy

Abstract. Gait velocity, cadence, and stride length are among some of the independent variables that have been prevalent in studies measuring plantar loading. When researchers examine plantar loading, they focus on parameters such as peak pressure, pressure time impulse, peak force, force time impulse, and contact time on different each region of the foot. Plantar loading research has relevance to foot disorders, surgical corrections of the foot, adaptive footwear, and detection and prevention of diabetic ulcers. As with any dynamic assessment of loading, the sampling rate of the instrumentation may play a role in the study findings. If the sampling rate is too low, there may loading present that is not detected. The purpose of this study was to determine the effect sampling rate has on measuring plantar loading during barefoot walking. Twenty-five participants walked across the EMED platform (4 sensors per sq. cm) within an average walking speed of 1.47-1.53 m/s for 5 trials. The sampling rate was manipulated to five distinct frequencies between 60 and 180 Hz. Differences in plantar loading will be examined in nine specific regions of the foot. Results of the analysis will show which sampling rate is adequate to represent plantar loading variables during an average walking speed.

U.29 Coloring a Multi-layered Nation: Café con Leche (Coffee with Milk)

José Rubio-Zepeda
Advisor: Ray Block, Jr. (Political Science) and Christine Hippert (Anthropology)

Abstract. Despite sharing a common racial origin, history, and culture, Haitians and Dominicans are deeply divided. The root of their difference stems from how their national identities deal with their African heritage. Haitians stress race, while Dominicans stress culture, constructing their national identity around Hispanicity, Catholicism, and skin tone. This study will analyze how a sample of Dominicans articulate and understand their identity. Participants will include men and women of urban and rural origin living in Santo Domingo and surrounding areas. Subjects will complete a brief (15 min.) questionnaire along with semi-formal and formal interviews assessing their identity as Dominicans, measure their attitudes toward Haitians and the implications of their racial ideology, correlating race, class, and skin tone. The methods will help provide empirical data fixed with personal perspectives from the Dominicans to generate a better understanding of the racial disparity between Dominicans and Haitian immigrants in the Dominican Republic.

U.30 Greening the Campus? Efficacy of the UWL Sustainability Events.

Russell Hoeldtke, Amie Kamp, Jeffrey Albrecht, Nicole Pielage
Advisor: Katherine Kortencamp (Psychology)

Abstract. In recent years, the concept of environmental sustainability has become a major concern for many sectors of society. In the realm of academia, attempts have been made to increase awareness of this concern among college students with the hope that they will take the initiative and strive for a more sustainable future. Such attempts were made at the University of Wisconsin-La Crosse by introducing a sustainability themed year which focused on the sustainability of the environment through visiting environmental speakers and participatory events, such as Ditch-the-Car Week. The current study focused on analyzing the featured events' effectiveness at causing behavioral and perspective-based changes in the UW-L student body. Overall, 171 UW-L students completed an online survey twice in 2011, once in September and again in November, after the sustainability events had concluded. Results from the current study indicated an increase in some environmental awareness and behavior variables among those who participated in sustainability events. These findings demonstrate that events such as those featured at UW-L can have positive effects on students' cognitive and behavioral perspectives toward the environment.

U.31 Excuse me would you mind? Interracial couples and the help they receive

Kelly Ehleiter and Sarah Jacobson
Advisor: Betsy Morgan (Psychology)

Abstract. Research has found that people tend to help others who are similar to them. Curiosity has lead to the interest in relationship between homogeneity of racial couples and their public acceptance. The proposed study will explore the relationship between helping behavior and the racial status of a couple requesting help. We will have four different couples request the help of individuals walking alone on well utilized campus paths. All of the couples will be male-female and the female will always ask for the favor. One couple will be European American /European American, another will be African American /African American , another will be European American male/African American female and the final couple will be African American male/ European American female. Helping behavior will be measured by participants' willingness to take a picture for the couple at a designated first location. If participants agree to take the first picture, the couple will ask if he or she is willing to walk to a second designated location for an additional picture – a walk that requires additional time. Consequently, helping behavior will be measured on an ordinal scale ranging from "no help" to "helped with first picture" to "helped with both pictures". We predict that a European American couple will receive more help than an African American couple, followed by an interracial couple consisting of an African American male and a European American female, and the couple to receive the least amount of help will be an interracial couple consisting of a European American male and an African American female. Although overt racism is not as socially acceptable as it was in the past, modern or aversive racism continues to be prevalent in everyday life. We expect that the results may provide support for unintentional racism as influenced by interracial status and helping behavior.

U.32 Connecting Service Learning and the 6-8 Classroom

Elizabeth Stark and Alexis Rusch
Advisor: Tim Gerber, Biology

Abstract. Service learning is a teaching method by which students perform community service while connecting to relevant science concepts in a K-12 curriculum. We traveled to the Angelo Coast Range Reserve, University of California Natural Reserve System, in May 2011 as part of a pre-teacher service learning project. The purpose was to connect hiking trail maintenance (service) to better understanding plant life cycles and the flow of matter in ecosystems at the middle school science level (learning). Curriculum connections were made to AAAS Science Literacy Benchmarks and strand maps were used to connect the learning to a larger science curriculum framework. This project exemplifies how K-12 teachers and students can engage in community service while also learning important lessons in science.

U.33 Women's Experiences During Childbirth: Planned Home versus Hospital Birth

Marla Kuchler
Advisor: Carol Miller, Sociology/Archeology

Abstract. Women have not always given birth to their children in hospitals. In fact, for most of human history, children were born in the home surrounded by family and friends. Some women are returning to this form of birth by planning to have their babies at home. This study explores the different experiences of women who have given birth; comparing planned home and hospital births. Ten women who have recently given birth either at home or in a hospital were interviewed and asked questions about their birthing experiences. Through analyses of these semi-structured interviews I examined the social relationships that are formed in each of these settings and how the reemergence of planned home birth is opening to a new set of social relationships based on the goals and desires of the woman planning the birth experience.

U.34 Parental Divorce's Impact on Grandparent-Grandchild Relationships: A College Grandchild's Perspective

Danielle Brey
Advisor: Carol Miller, Sociology/Archeology

Abstract. The past century has brought about drastic changes in the family structure. A verticalization of the intergenerational family has occurred. This change has allowed for more people to become grandparents, while allowing these grandparents to develop a deeper and more meaningful relationship with their grandchildren. The past century has also brought an increase in family restructuring through parental divorce and separation. Through interviews with twenty college student about their relationships with their grandparents (ten interviewees with divorced parents, 10 interviewees with married parents), my research explored how parental divorce impacts a grandchild's relationship with their grandparents.

U.100 Analysis of MHV68 ORF50 #1 mutations via the process of en passant mutagenesis

Jamie Wiepz
Advisor: Darby Oldenberg, Health Professions

Abstract. The analysis of mutations provides for a better understanding of how various genes function and influence other biological processes. The present study was aimed at isolating three mutations (ISRE Δ1, Δ2, Δ3) in the interferon gamma specific response elements (ISREs) of the MHV68 (murid herpesvirus) ORF50 #1 through the process of en passant mutagenesis. The ORF50 is also known as the Rta protein and is responsible for the reactivation of the virus from latency through interactions with other cellular proteins. The process of en passant mutagenesis involved the use of PCR, cloning, bacterial artificial chromosomes (BAC) DNA and restriction fragment length polymorphism analysis (RFLP). The mutations were manipulated into the Escherichia coli strain GS1783 D049 + 86.1 in single, double and triple combinations. Once the mutations were transformed into the E. coli strain, the cells were plated, grown and analyzed using RFLP analysis. This technique uses restriction enzymes to further observe and study the ORF50 mutations and determine what type of affect the mutations in the ISREs have towards the reactivation ability of the virus. The study of mutations in the ORF50#1 of MHV68 will help lead to a better understanding of how the virus functions and therefore how it can be treated.

U.101 Regional Variation in Hopewell Copper Use
Cynthia Kocik
Advisor: Constance Arzigian, Sociology and Archaeology

Abstract. For over a century, researchers have attempted to adequately describe and define the Hopewell complex, which arose in the Middle Woodland period around 2000 years ago in the eastern and central Midwest United States. Burial mounds, acquisition of large amounts of exotic materials, and finely made artifacts were hallmarks of Hopewell, but questions remain regarding how and why Hopewellian ideas and material culture spread and how different regions interacted. This study compares three Hopewell regions in an effort to contribute to the answers to these questions. Specifically, the use of copper is investigated in the Hopewell center along the Scioto River in Ohio, the Havana variant based in the Illinois River Valley, and Hopewell-affiliated sites in southwestern Wisconsin on the periphery of the Havana region. Analysis of the style and form, context, and metric attributes of copper artifacts in each region will address how this material was used and the ideas and beliefs it represented, as well as how it can offer insight into the relationship between these regions.

Poster Session B
Valhalla Hall: 11:10am-12:50pm

U.36 The Economic Impact of a Militaristic Society: A Study on the Hittites
Amber Hawley
Advisor: Mark Chavalas, History

Abstract. The Hittite empire was located primarily in central Anatolia, but as a militaristic society the borders were constantly changing. The focus of this study will be looking at the New Kingdom period which begins c. 1400 B.C. and lasts until c. 1190 B.C. when the Hittite civilization collapsed. The purpose of this study is to better understand the relationship between the military, the economy, and the societal collapse of a militaristic society. The Hittite empire suffered from many problems near the end of its existence but the goal of this research is to lend credence to the idea that the military's demand for subsistence goods was too great for the economy to provide. By analyzing historical documentation, many aspects of the Hittite culture can be examined such as trade networks which were heavily relied on for grain supply as well as military campaign reports which would suggest how much subsistence goods were being utilized in a campaign. In addition to looking at historical documentation, the study will also be looking at archaeological excavations of Hattusa, the Hittite capital, and Kaman-Kalehöyük, a supply city that would restock the campaigning military. Other sites will also be examined, but these two will be the primary focus because of the importance of each location and variation that they represent. By examining these cities and historical documentation, better understanding of the economy and military will be attained for militaristic societies; and as such, a better understanding of their relationship to the societal collapse can be inferred.

U.37 Clan Prominence in the Asuka Period of Japan
Ian Watts
Advisor: David Anderson, Archaeology

Abstract. The Asuka Period of Japan is characterized by the introduction of Buddhism from Korea and a consolidation of power by the central government. The interplay between the Imperial Clan and the Soga Clan was integral in shaping everyday life in Asuka as the introduction of Buddhism brought the creation of permanent architecture in the shape of temples. These temples, primarily constructed by both the Imperial and Soga Clans, required labor to be extracted from local populations. An examination of the premiere Buddhist temple in Asuka, Asukadera, will shed light on the implications of this labor procurement.

U.38 HELLENISTIC COLONIALISM ON THE FRINGE: THE ROLE OF TELL ES-SWEYHAT AND CULTURAL INTEGRATION WITHIN THE SELEUCID WORLD Hellenistic Colonialism on the Fringe: The Role of Tell es-Sweyhat and Cultural Integration within the Seleucid World

Maximilian Pschorr
Advisor: David Anderson, Archaeology

Abstract. Cultural interaction and diffusion is a multi-faceted phenomenon, which occurs varyingly in different contexts. The site of Tell es-Sweyhat, located in modern Syria, off the east bank of the Euphrates River, was occupied during several time periods. In the Hellenistic period, this site was administrated by the Seleucid Empire (B.C. 312 – B.C. 63). Tell es-Sweyhat presents an opportunity to examine culture interaction and adaptation by the Seleucid administrators, in what would have been an area on the fringe of Hellenistic occupation. A statistical analysis of the archaeological assemblage at Tell es-Sweyhat, when compared with other relevant sites, will illustrate this cultural interaction.

U.39 Celestial Alignments in the Ritual Structures of Neolithic Orkney

Megan Kasten
Advisor: Joseph Tiffany, Archaeology

Abstract. The Neolithic period arrived around 4000 B.C. in Britain, along with pottery, domestication of animals and plants, and a burial mound tradition from Continental Europe. This tradition quickly spread throughout the British Isles. Within a few hundred years it had taken hold of Orkney, a group of islands off the northeast coast of Scotland. This landscape is dotted with both numerous burial cairns and a few stone circles from this time period. Archaeologists have recently taken to studying the alignments of these structures to comment on the proposed rituals that were performed, especially those that were centered on the solstices. By comparing the orientations of these structures, one can determine whether they were related in religious purpose or if there was no connection whatsoever. I will be comparing these megaliths on both a typological and regional basis to determine these possible spatial relationships.

U.40 The Evolution of the Divine Temple and Religion in Ancient Egypt

Nicole Barnes
Advisor: David Anderson, Archaeology

Abstract. One of the draws of Ancient Egypt has always been the fascinating and complex religion that was so important to the ancient Egyptians. Religion was vital to Ancient Egyptian life; even foreign rule could not change the Egyptians' deep rooted religious beliefs. As a result, a common interest in Egyptian archaeology is the numerous religious temples that show various architectural styles and decoration throughout their long history and evolution. By looking at Egyptian divine temples starting from the New Kingdom through to the Graeco-Roman era (~1550 B.C. – 395 A.D.), we can see that the Egyptian divine temple architectural layout and decoration changes in response to changes in the current practicing religion. From this we can observe how changes in one cultural aspect can directly influence changes in other aspects of life.

U.41 Upper Mississippi River Core Ananylsis

Carmen Alicia Rivera Perez, Kali Schreiner, Connor Hutchinson
Advisor: Gretchen Gerrish (Biology) and Colin Belby (Geography and Earth Science)

Abstract. Physical habitat characteristics in the Mississippi River greatly affect the relative fitness of zooplankton in main channel and backwater ecosystems. Dams influence the physical dynamics of these systems throughout dry and rainy seasons. Here, we reconstruct historic zooplankton populations using sediment core samples to determine the biological effects of dam introduction in the 1930's in Pool 8 of the Upper Mississippi River. The extent of the dam's impact is determined by analyzing sediment core samples from two backwater lakes attached to the main channel. In each lake, we have analyzed the number and type of dormant zooplankton eggs in each layer of sediment. Older, or deeper, sediment layers reflect pre-dam construction conditions, while top layers show current and post dam conditions. Data support that zooplankton composition and relative abundances have shifted since introduction of dams in the system. Continued sediment core analysis can supply an increased understanding of biological recovery in post-dam conditions.

U.42 Trophic transfer of methylmercury in the lower food webs of six upper Midwestern National Parks

Jordan Ludwigson, Ryan Lepak, Carlton Folster
Advisor: Kristofer Rolfhus, Chemistry

Abstract. Methylmercury (MeHg) bioaccumulation occurs primarily between the aqueous and particulate phases in aquatic systems. Health related hazards related to MeHg, in both human and aquatic life, is a concern to ecologists and consumers alike. However, the lower food webs of aquatic systems are generally under-characterized. As part of the EPA's Great Lakes Restoration Initiative, water bodies were examined for total and methylmercury content in six national parks surrounding the Great Lakes. Analyses of concentrations in water, seston, sediment, and zooplankton were performed; similar analyses of prey fish, predatory fish, and dragonfly larvae were conducted for comparative purposes. Our data indicate that aqueous methylmercury concentrations are relatively low and similar to other semi-remote ecosystems in the upper Midwestern US (0.04-0.40 ng/L). The results from the lower food web mercury analysis are presented to provide insight as to what factors are controlling MeHg contamination and its trophic transfer within the Great Lakes region.

U.43 Effects of restraint stress on CRF expression and release in the rat stomach

Nicole Long
Advisor: Sumei Liu, Biology

Abstract. Background: Stress effects gastrointestinal function. Corticotropin releasing factor (CRF) has been shown to inhibit gastric motility and slow down gastric emptying during times of stress through both peripheral and central mechanisms. The present study aims to test a hypothesis that stress increases CRF expression and CRF release in the stomach. Methods: Adult male Sprague Dawley rats were restrained for 1 h. The control rats were allowed to freely move in their cages. Fecal pellet output (FPO) was measured for the 1 h period. Rats were euthanized at different time periods after stress. The stomach was removed. Whole-mount myenteric plexus preparations were used for immunohistochemical staining for the peptide CRF. Enzyme immunoassay was used to measure CRF release. Results: Exposure to restraint stress for 1 hr significantly increased the FPO. Restraint stress significantly increased the number of CRF-immunoreactive (IR) neurons/myenteric ganglion in the rat stomach immediately after stress. The number of CRF-IR neurons/myenteric ganglion was still significantly elevated 4 h and 8 h after the restraint stress, and returned to normal level 24 h after the restraint stress. Restraint stress also increased CRF release in the rat stomach. The amount of CRF release in the rat stomach was significantly increased immediately and 4 h after stress, and returned to normal level 8 h after restraint stress. Conclusions: Restraint stress increases CRF expression in the enteric nervous system of the rat stomach for at least 8 h after restraint stress. Levels of CRF release in the stomach were elevated for at least 4 h after restraint stress. Elevated CRF levels and CRF release in the stomach may contribute to the slowdown of gastric emptying and fullness under times of stress. (Supported by UW-L undergraduate research grant to K. Beckwith and N. Long and UW-L faculty research grant to S. Liu)

U.44 Effects of restraint stress on CRF expression and release in the rat colon

Kaylee Beckwith and Gaelle Talhouarne
Advisor: Sumei Liu and Scott Cooper (Biology)

Abstract. Background: Stress has been found to interrupt gastrointestinal function. Corticotropin releasing factor (CRF) has been associated with stress-evoked acceleration of large intestinal motility through both central and peripheral mechanisms. The purpose of the present study was to test a hypothesis that stress elevates CRF expression and increases CRF release in the rat colon. Methods: Male adult Sprague Dawley rats were placed under restraint stress for 1 hr. Controls were allowed to move freely in their cages without restraint. Fecal pellet output (FPO) was monitored for the 1 hr period. Animals were euthanized at varying time periods from immediately after the 1 hr stress period to 24 hours later. Segments of the colon were removed. Real-time RT-PCR was used to measure CRF mRNA levels. Whole-mount myenteric and submucosal plexus preparations were used for immunohistochemical staining for CRF. Enzyme immunoassay was used to measure CRF release. Results: Exposure to restraint stress for 1 hr significantly increased the FPO indicating an increase in colonic motility. CRF mRNA levels were significantly elevated immediately after the 1 h restraint stress, remained at high levels 8 h after stress, and returned to normal level 24 h. Restraint stress significantly increased the number of CRF-immunoreactive (IR) neurons/ganglion in the myenteric plexus of the rat colon. The increase of CRF-IR neurons lasted for 4h and returned to normal level after. Restraint stress also significantly increased the number of CRF-IR neurons/ganglion in the submucosal plexuses of the rat colon which lasted for 8h, and returned to normal level after 24h. Restraint stress tends to increase CRF released in the colon, however, no statistical significance was found. Conclusions: Acute restraint stress elevates CRF mRNA and protein expression in the enteric nervous system of the rat colon. Increased CRF levels in the colon may contribute to stress-induced acceleration of colonic motility and abdominal distress.

U.45 Characterization of a Model Peptide by NMR Spectroscopy for Potential Antibiotic Application

Emma Sabel
Advisor: Adrienne Loh, Chemistry

Abstract. At a time when bacteria are gaining resistance to antibacterial drugs at an alarming rate, new avenues of drug design are being investigated. Helical peptides offer promising potential as a solution. The aim of this project is to characterize the structure of a short, 8-residue peptide in various conditions. The molecule, termed "AA45," consists of mainly a-aminoisobutyric acid (Aib) residues, with alanine (Ala) residues implemented at positions 4 and 5 in the peptide. Aib is a sterically hindered amino acid naturally found in bacterial cells which preferentially forms 3-10 helices, a formation ideal for penetrating bacterial cell membranes. The specific goal of this portion of the project is to determine what effect the smaller alanine residues have on the peptide's structure. Nuclear magnetic resonance (NMR) spectroscopy was utilized to observe the hydrogen bond activity of the molecule, and therefore its structure, at various temperatures and solvents. A kinetics experiment was completed to further characterize the peptide's structure. It was ultimately determined that the placement of the two alanine residues causes a "kink" in the molecule, breaking a hydrogen bond and exposing an additional hydrogen atom to the solvent. It is unknown at this point whether a kinked peptide would be useful as a potential peptide antibiotic. Concurrent and future projects will compare the placement of alanine residues with that of other amino acids in various positions in the peptide to determine the most stable and effective constitution for potential antibiotic medicines.

U.46 Designing Better Antibiotics: Structural Effects of Charge Repulsion in a Model Antibiotic Peptide

Kevin Larsen
Advisor: Adrienne Loh, Chemistry

Abstract. Persistent infections caused by antibiotic-resistant organisms are a serious threat to public health. Antibiotic peptides (specific short chains of amino acids) offer one promising alternative to conventional antibiotics because they act through a mechanism that organisms cannot easily bypass. Essential characteristics of natural peptide antibiotics are a helical shape and a net positive charge. We are characterizing the effects of charge on structure in model peptides in order to better inform peptide antibiotic drug design. Our peptides are composed primarily of the uncharged amino acid α-methylalanine (Aib), found in some natural antibiotics but not in humans. Aib induces helical structures due to inherent steric hindrance. Our peptides also contain lysine (Lys), which is positively charged, and one of the 20 standard monoalkylated (less hindered) amino acids. Previous studies have suggested that the placement of uncharged monoalkylated amino acids in Aib-rich peptides can influence helical shape, but the specific effect of charge placement has not been well characterized. We report here the NMR (nuclear magnetic resonance) structural characterization of an Aib-rich peptide with two Lys residues placed one turn apart. Assignments of the NMR signals were obtained from natural abundance 1H-13C HSQC and CO-selective HMBC spectra. ROESY crosspeaks and temperature data provided distance constraints for the structure calculation, which was performed with the software package Xplor-NIH. Our results show that the peptide is 310-helical but with a slight bend away from the charged face. Thus, charge repulsion can also influence structure and should be considered carefully in antibiotic peptide drug design.

U.47 Structural Effects of Steric Hindrance on Two Disubstituted Antibiotic Peptide Models

Theodore Savage, Luke Oetzel, Emma Sabel, Kevin Larsen
Advisor: Adrienne Loh, Chemistry

Abstract. Persistent infections caused by antibiotic-resistant microbes are a serious threat to public health. Peptide antibiotics, which are composed of individual units called amino acids, offer one promising solution. These peptides tend to incorporate amino acids that drive the formation of helices. Incorporation of the amino acid Aib (α-aminoisobutyric acid) into designed peptide antibiotics has been shown to enhance helicity, increase resistance to degradation, and maintain or even enhance bioactivity. Aib is known to impart a strong helical bias due to steric hindrance (repulsion between large groups that are too close in proximity). However, the placement of less hindered amino acids in a predominantly Aib sequence can significantly perturb helical structure. We report here the 3D NMR (nuclear magnetic resonance) structural characterization of two model antibiotic peptides composed primarily of Aib, with two alanine residues placed either one turn apart (AA36) or sequentially (AA45). Backbone and sidechain 1H and 13C resonances were assigned using natural abundance HSQC and CO-selective HMBC spectra. 1-D temperature dependence and solvent titration of amide chemical shifts in AA36 indicate a 310-helical conformation with all intrahelical H-bonds intact. However, in AA45, the H-bond to Aib6 appears solvent exposed, possibly indicating a broken hydrogen bond. ROESY crosspeaks were used to obtain distance constraints, which were used to calculate the structures of both model peptides using a modeling program called Xplor-NIH. The structure of AA36 is a 310-helix. However, the structure of AA45 reveals a kink in the helix towards the two less sterically hindered Alanine residues, breaking the H-bond which spans the two. This break in the hydrogen bond is consistent with the temperature dependence and solvent titration data. Thus, placement of less sterically hindered residues in an Aib sequence can have profound effects on helical structure and should receive due consideration in peptide antibiotic design.

U.48 Assessing the Binding of Triclocarban to Dissolved Organic Carbon

Sasha Chihak
Advisor: Nadia Carmosini, Chemistry

Abstract. Triclocarban (TCC) is an antimicrobial pesticide used in personal care products and plastics that have been identified as emerging contaminants in aquatic and terrestrial environments. The extent to which TCC infiltrates ecosystems is dictated by its mobility and persistence in municipal wastes (biosolids), soils, and water. Dissolved organic carbon (DOC) consists of large organic molecules dissolved in the water phase of soils (e.g. pore spaces) and biosolids that have the capacity to bind contaminants and enhance their mobility through soils. An enhanced solubility technique is being used to determine the binding of TCC to standardized DOC materials such as Leonardite and Pahokee Peat) in 10 mM phosphate buffer at pH 7. Due to the low solubility of TCC (0.045 mg/L1) in aqueous solution, High Performace Liquid Chromatography- Mass Spectroscopy QQQ was employed for the quantitative determination of the contaminant. (1) Snyder, E. H.et.al. Science of the Total Environment 2010, 408, 2667-2673.

U.49 Parasocial Interactions Between Audience Members & Live Musical Performers

Mackenzie Hautala
Advisor: Ronda Leahy, Communication Studies

Abstract. Live musical concerts are a major sector of the economy. Live Nation Entertainment, producing over 20,000 concerts, leads the world in live entertainment and eCommerce (Live Nation, 2011). It is apparent that these concerts captivate millions of audience members. Within these concerts, parasocial interactions form a relationship between a performer and an audience member. These interactions are influenced by perceptions, participation, and exposure of the audience member within the setting. Affinity-seeking strategies are also used in the relationship development. Participants over the age of 18 years will be surveyed on a live concert experience. There has been extensive research on parasocial interactions in the media; however, there has been limited research on the interactions in live performances. Therefore, it is important to further this research to understand parasocial interactions in an unfamiliar context. This research will explore and aid in a new understanding of parasocial relationships. In addition, it may provide an insight for performers in the ways these interactions influence audience satisfaction. The results from these interviews will give an understanding of the perceptions of parasocial interactions between audience members and live musical performers. Specifically, this study will examine the impact of these perceptions relating to audience satisfaction. The research will be conducted in the spring of 2012.

U.50 Comparing Single-Agent and Multiagent Reinforcement Learning in a Cooperative Setting

Douglas MacFarland
Advisor: Martin Allen, Computer Science

Abstract. When multiple individuals work together as a team, with a common goal, they can achieve much that is out of reach to a single agent. Unfortunately, team-work involves a lot of complexity. In particular, when agents work in decentralized environments, where each individual has its own private information, not always shared with all its team-mates, optimal planning and decision making quickly grow infeasible. Previous artificial intelligence research has established that decentralized multiagent problem solving is computationally infeasible, and generally optimal techniques are not within reach. Interest has thus turned to methods that avoid full planning, reaching through other means for approximate solutions. Multiagent reinforcement learning (RL) is one such approach. This work extends single-agent Q-learning, a popular technique, to the multiagent case. Empirically, it is shown how the single-agent techniques fail to produce coordinated team behavior even in relatively simple domains. In large part, this is due to the combinatorics of the situation. Like most RL techniques, Q-learning involves random exploration of the state and action space of the problem, in order to try a variety of possible approaches while learning which ones are better than others. When dealing with multiagent teams, however, random exploration is less effective for finding beneficial cooperative actions, since the chance occurrence of such coordination can become very unlikely. Having established the difficulties facing traditional techniques, the work examines ways in which they can be improved by the introduction of heuristics that guide the learning process in non-random ways. We present results demonstrating the difficulties for single-agent RL in a cooperative context, despite a wide range of parameter settings to control the learning process. It will also look at the effects of the heuristic assumptions, and how they can, in some cases, improve learning behavior substantially.

U.51 A Case Study of the Effect of Music On Hand Tremor in a Patient with Parkinson's disease

Christopher Jones
Advisor: C. Russell Hendrix & Carl C. Foster, Exercise and Sport Science

Abstract. Parkinson's disease causes many life changing symptoms that as of now can only be mitigated with invasive treatments. A less invasive procedure that would diminish the symptoms of the disease would be valuable to persons with Parkinson's. Music therapy has been shown to help with locomotion, difficulties in flow of speech, and freezing. The purpose of the current study was to examine the acute effects of music on fine motor control and hand tremor. We hypothesized that music would positively affect fine motor control by decreasing hand tremor. This case study examined a 50 year old man with early onset Parkinson's disease stage 2 to 3. The music used for the current study ranged from 62-195 beats per minute (bpm). Using a pencil adapted to create a larger grip to improve dexterity, the subject was instructed to keep the tip within a circle 3.25cm in diameter on an index card for two minutes while each song played. The area within the tremor-scribble was measured by weighing (in μg) the cutout of the tremor-scribble on a balance scale. The results showed a significant improvement in fine motor control with certain songs (e.g. beat frequencies). Why these specific songs have positive effects remains to be answered. The findings support the hypothesis that music can positively affect fine motor control with Parkinson's patients.

U.52 Disparity Between Heart Rate, Blood Lactat and RPE as Strategies for Monitoring Exercise Training Intensity

Samantha Olson
Advisor: Carl Foster, Exercise and Sport Science

Abstract. INTRODUCTION: High intensity interval exercise training (HIT) has recently become popular. However, HIT is not easily monitored by methods such as heart rate (HR) that work well with conventional steady state training. Methods that track metabolic disturbances, such as blood lactate concentration (BL), the Rating of Perceived Exertion (RPE) or the Session RPE may be superior. This study was designed to compare these methods of monitoring training during steady state and intereval exercise training. METHODS: Well-trained volunteers (n=9) performed randomly ordered 30 min cycle ergometer exercise training using either steady state or interval (30s/30s, 60s/60s & 120s/120s) exercise at the same mean power output. HR, BL, RPE and Session RPE were monitored using conventional laboratory methods. RESULTS: There was no difference in mean HR during SS, 30s, 60s & 120s (144 +/-20, 157+/-16, 152+/21 & 152+/14 bpm). However, BL (4.0+/2.6, 6.1+/-2.3. 7.2+/-2.6 & 8.7+/-2.2 mmol*l-1) and RPE (3.2+/-1.3, 3.8+/-1.8, 4.1+/-1.8 & 4.4+/-1.5) were significantly different. Mean RPE and Session RPE (measured 30 min post exercise) were well-correlated (r=0.89) CONCLUSIONS: HR may be inadequate to track the substantial within session changes in exercise intensity during interval training, and may systematically underestimate both the metabolic and perceived chanllenges presented by HIT exercise. However, the use of RPE and Session RPE, which is technology independent, appears to be adequate.

U.53 Comparisson of inshoe loading in female runners with standard footwear and minimalist shoes during treadmill running

Nicole Flackey, Tim Suchomel, Allison Seifert
Advisor: Tom Kernozek, Physical Therapy

Abstract. Barefoot running and minimalist shoes is a recent trend in running. Loading is thought to be important regarding lower extremity injury. It is unknown how these minimalist shoes influence inshoe loading. We conducted a study on fourteen female recreational runners who ran at least 10 miles per week. Each ran on a treadmill for 5 minutes with inshoe sensors positioned inside of their shoes. All participants ran in a standardized control shoe and a minimalist shoe in a randomized order. Data were collected at 200 samples per second for the last 30 seconds of the run. Twenty steps were analyzed and inshoe loading variables were calculated for five plantar regions: heel, midfoot, medial forefoot, central forefoot and lateral forefoot. Multivariate analyses were performed on each plantar region between the control and minimalist shoe. There was an overall increase in peak force, peak pressure, and pressure time impulse for the minimalist shoe in the medial, central, and lateral forefoot. Peak pressure also increased in the midfoot while force time impulse and maximum force were reduced in the minimalist shoe. There was also a reduction in force time impulse in the heel region. It appears that minimalist footwear resulted in more forefoot and midfoot loading while reducing heel loading. These findings support an immediate change in running mechanics from minimalist shoe use.

U.54 Spatial Variation in La Crosse, WI Residential Infiltration Rates

Quinn Lewis
Advisor: Colin Belby, Geography and Earth Science

Abstract. Soil infiltration rates are a crucial component in modeling urban rainwater runoff. Current models rely on U.S. Dept. of Agriculture Natural Resource Conservation Service (USDA-NRCS) county -level soil survey classifications that are rarely backed by field-tested data. Residential lawns in La Crosse are classified as having moderately high infiltration rates (1.4-3.6 cm/hr), but recent research suggests assumptions made about residential soil infiltration rates are often inaccurate. Twenty homes in La Crosse residing in different age groups were field-tested using a double ring infiltrometer. Field-tested data revealed infiltration rates roughly one order of magnitude higher than the highest infiltration category (>3.6 cm/hr) used by soil survey classifications. Extremely large standard deviations (12.16-21.21) within each age group made comparisons between age groups difficult. Measured infiltration rates and impervious area measured from existing aerial photographs were compared to the existing hydrologic classification and assumed impervious area. Both sets of data were then used to estimate runoff using the USDA-NRCS Curve Number (CN) method and the TR-55 rainfall runoff model.

U.55 Characterization of the Antibacterial Drug SK-03-92 and MIC Testing of CL and SK-03-92 Analogs

Michelle Lane and Sara Medina-Bielski
Advisor: William Schwan, Microbiology

Abstract. Bacterial antibiotic resistance is a major health problem leading to failed treatment regimens. To counter antibiotic resistance, new drugs are needed. Previously, a drug named SK-03-92 was synthesized which presented broad activity against gram-positive bacteria. This study involved a further characterization of SK-03-92 as well as MIC testing of several additional drug analogs. To further characterize SK-03-92, mutation frequency determinations analysis of two transposon mutants with changed MICs against SK-03-92 and isolation of RNA from drug treated or untreated populations were performed. A mutation frequency of 3.07 x 10-8 was determined using Staphylococcus aureus MW2. The MICs of the two S. aureus RN4220 transposon mutants indicated that transposon mutant #40 had an MIC equal to RN4220, but transposon mutant #45 had a 16-fold lower MIC compared to the parent strain. Several attempts to clone DNA from transposon mutant #45 were unsuccessful. To determine how SK-03-92 affects gene expression in S. aureus MW2, one cell population was left untreated whereas the other population was treated with 4X MIC of SK-03-92. Total RNAs were extracted from both populations and several high quality preparations were made for future microarray work. In addition, Bacillus cereus, Enterococcus faecalis, Pseudomonas aeruginosa, and Escherichia coli were used for MIC testing of several SK-03-92 and CL drug analogs. All of the drugs tested against P. aeruginosa and E. coli had high MICs (>128 mg/ml). However, the MICs for E. faecalis and B. cereus ranged from 1 to >128 mg/ml. From all the CL-analogs tested, none were more effective than SK-03-92. The resistance frequency of SK-03-92 and the future microarray work with both RNA populations move the new drug closer to clinical use.

U.56 The potential association of Buttiauxella within intestinal tract Arion fasciatus

Sydney Lomnes
Advisor: Bonita Bratina, Microbiology

Abstract. Arion fasciatus, also known as the orange-banded slug, is an invasive species from Europe that is typically found in terrestrial environments. Recently, it has been discovered in the Midwest living in an aquatic environment, mostly spring fed streams. Buttiauxella is one of the numerous microbes that have been isolated from the Arion fasciatus intestinal tract. Because the Buttiauxella isolated is most closely related to an isolate found in Germany, this could potentially indicate that Buttiauxella is an endosymbiote that accompanied the slug over from Europe. The first step to assessing this potential symbiotic relationship is to better understand the physical relationship between Buttiauxella and its host. I intended to collect slugs from various local sites and perform fluorescent in situ hybridization (FISH) using oligonucleotide probes specific for Buttiauxella. These probes will hybridize onto the Buttiauxella ribosomal RNA (rRNA), which will make the Buttiauxella fluoresce. Then, we can observe its potential associations with the slug's intestinal tissues and other microbes within the intestinal samples from numerous slugs.

U.57 Investigating the Gut Microbiota of Arion fasciatus Across Geographic, Temporal, and Seasonal Boundaries.

Danielle Cloutier
Advisor: Bonita Bratina, Microbiology

Abstract. The banded slug, Arion fasciatus, is an invasive European terrestrial species that was introduced in North America in the 1800s. In 2004 it was reported to be found also living in the Midwest in cold water, well-oxygenated, spring-fed streams that remain ice-free during the winter. Since the banded slug has covered such vast distances and is now aquatic in our area, we are interested in comparing the intestinal microbiota across geographic and habitat boundaries. To study the microbial community composition of the banded slug gut, DNA was extracted from the gut microflora of slugs from five different sites and clone libraries were prepared from amplified 16S rRNA genes. Although over 70 different bacteria from more than 15 genera have been isolated from the slug microflora, we did not observe this level of diversity in our clone libraries. Sequence analysis of the 16S rRNA gene from the clone libraries indicated that a few of the sequences were novel, but the remaining sequences fell into only about seven genera. Four of the five sites had sequences most closely related to sequences in the genus Buttiauxella, which comprised about 90% of the clones from one site. Buttiauxella are primarily found as inhabitants of mollusks and have been isolated from over 200 snail and slug strains in Europe. Since Arion fasciatus was introduced from Europe, Buttiauxella may be endosymbionts that were brought over with the slug. Due to poor clone library efficiencies, the low number of clones made for limited comparisons across the libraries and may be why we did not detect Buttiauxella at the fifth site. We, therefore, are currently in the process of pyrosequencing the microflora from slugs from the five aquatic sites and one terrestrial. The deeper sequence coverage provided by pyrosequencing should allow for a more thorough comparison, hopefully allowing us to observe trends across geographic and habitat boundaries.

U.58 What does it take to run a free clinic in Kathmandu, Nepal?: An Analysis for the future of a Non-Profit

Aubree Thelen
Advisor: Gary Gilmore, Public Health

Abstract. Nepal is a one of the Least Developed Countries in the world, which has major disparities between healthcare for the Nepalese people and for developed countries. The collection of healthcare data from the local Buddhist monks during treatment at a free clinic could help solve this problem to an extent, potentially for future clinics run by non-profits. Data Collection was qualitative and analyzed for trends, with questions that included "What are their diagnoses?", "What supplies were used?" and general health statistics.

U.59 Evaluation of sentinel lymph node biopsy: With imaging, probe only, and overnight

Allison Kluz, Christopher H Hunt, Geoffrey B Johnson. Patrick J Peller
Advisor: Kimberly Chandler, Nuclear Medicine Mayo Clinic

Abstract. Filtered technetium-99m-sulfur colloid (99mTc-FSC) is used to assist surgeons in identifying sentinel lymph nodes (SLN) in patients with breast cancer. In our practice a probe is used during surgery for detection of 99mTc-FSC activity in SLN, and in some cases lymphoscintigraphy imaging is performed with skin marking prior to surgery. In addition, methylene blue dye is often injected at the time of surgery to visually identify SLN. Here we compare four variations of 99mTc-FSC techniques to see if adding lymphoscintigraphy with skin marking prior to surgery, or if overnight delay after 99mTc-FSC injection impacts the number of lymph nodes harvested or the frequency of diseased (positive) lymph nodes identified. A retrospective review of 100 women who received a 99mTc-FSC injection prior to surgery for breast cancer from 2011-2012 was conducted. Equal numbers of patients were identified in four categories: (1) SLN lymphoscintigraphy performed with same day surgery (N=25), (2) 99mTc-FSC injection only with same day surgery (N=25), (3) SLN lymphoscintigraphy performed with next day surgery (N=25), and (4) 99mTc-FSC injection only with next day surgery (N=25). Pathology reports were reviewed for the number of nodes removed during surgery and positive for malignancy. The use of blue dye during surgery was also assessed. Mean age was 61.5 years (range 33-89). The average number of nodes seen per lymphoscintigraphy was 1.44 +/- 0.6. The average number of nodes removed in surgery was 2.3 +/- 1.1. Blue dye was used to assist during surgery in 86 women. The mean number of nodes removed in each of the 4 patient groups was similar (2.4, 2.3, 2.2, 2.3 respectively, p=0.99; 1-way test ChiSquare Approximation). No significant difference was found in use of blue dye and the technique used in SLN identification (p=0.07). The frequency of breast cancer detected in the SLN was recorded as: 20%, 28%, 4%, and 20% in each of the 4 patient groups, respectively. Although breast cancer patients underwent a variety of 99mTc-FSC techniques to assist SLN identification, all techniques produced similar nodal harvest results, but the cancer detection rates varied substantially.

U.60 Effect of patient walking during biliary ejection fraction studies

Amber Parker
Advisor: Carlyn Johnson, Nuclear Medicine/ Ministry Saint Joseph's Hospital/ NMT Program

Abstract. Objective: The protocol for biliary studies at Ministry Saint Joseph’s Hospital includes having the patients walk during the exam to improve gallbladder visualization. Biliary ejection fraction studies require that the gallbladder be fully distended with radiolabeled bile prior to the administration of cholecystokinin (CCK). This is done to ensure an accurate ejection fraction value. This study evaluates the effectiveness of walking the patients to increase gallbladder filling and visualization prior to CCK administration. Methods: From October 2010 to September 2011, the images of 141 patients who underwent a biliary study were assessed for walking. Of those patients, 73 walked for times varying between 3 and 33 minutes. Through an analysis of the original images, the amount of time the patient walked was determined by the number of blank frames during the study. All patients were given approximately a 5mCi dose of 99mTc-Choletec and were imaged using a dynamic 60 sec/frame protocol. To verify whether the walking had been effective, a region of interest was drawn around the gallbladder along with a liver background region of interest. Counts in these regions were taken from the last full frame prior to exercise and the first full frame post exercise. After background correcting the gallbladder counts, the pre- and post-walking images were compared. Results: Of the 73 patients, 92% showed increased gallbladder filling and visualization after walking. Five patients did not experience significant changes; three already had substantial gallbladder counts prior to walking, and two showed no gallbladder before or after walking. Conclusion: Allowing the patients to walk during biliary studies effectively increases gallbladder filling and visualization which ensures an accurate ejection fraction value.

U.61 The Effects of Regadenoson Infusion Time on Aminophylline Usage

Nicollette Stenzel and Holly Bremer
Advisor: Carlyn Johnson, Nuclear Medicine/ Ministry Saint Joseph's Hospital/ NMT Program

Abstract. Objective: Regadenoson (Lexiscan, Astellas Pharma Us, Inc., Deerfield, IL) has become one of the most used pharmacologic stress agents for myocardial perfusion (MPI) studies since its FDA approval in April 2008. A suggestion from an Astellas representative was to infuse Lexiscan over 25 seconds rather than 10 seconds to decrease the severity of the patients' symptoms. Aminophylline may be administered at a standard dose of 50 mg to reverse any lingering symptoms that a patient may have developed during the pharmacological stress test. The purpose of this research was to determine if there is a correlation between a slower infusion time and aminophylline usage based on patient symptoms. Methods: A retrospective review of 1,272 patients that had Lexiscan MPI studies between January 2011 and December 2011 was performed. Patient data from August was excluded since the switch to the slower infusion time occurred during this month. Each patient's cardiac stress test note sheet was examined to determine if aminophylline was given and what symptoms the patient had experienced. Patients receiving aminophylline following the 10 second infusion (Jan.-July) were compared to those receiving aminophylline after the 25 second infusion (Sept.-Dec.). Results: Forty-three percent of the Lexiscan stressed patients received aminophylline following the 10 second bolus and commonly experienced shortness of breath (22%), headache (19%), and gastrointestinal discomfort (18%). The patients that received aminophylline after the 25 second infusion was forty-four percent with the most common symptoms reported as shortness of breath (22%), gastrointestinal discomfort (21%), and headache (18%). Conclusion: Extending the infusion time from 10 seconds to 25 seconds showed a slight increase in aminophylline use. Patients' most common symptoms stayed the same for both infusion times. Therefore, we found no correlation between the speed of Lexiscan infusion and aminophylline usage for adverse patient symptoms.

U.62 Comparison of Bone Scintigraphy and 11C-Choline PET/CT scans in Skeletal Metastases from Prostate Cancer

Ashley Huntley, Patrick Peller, Christopher Hunt, Geoffrey Johnson
Advisor: Kimberly Chandler, Nuclear Medicine Mayo Clinic

Abstract. Objectives: This study measures the choline uptake and density of bone lesions in prostate cancer patients undergoing C-11Choline PET/CT scanning compared to visible abnormalities on 99mTC-MDP bone scans. Further, this study aims to determine the relationship to PSA levels. Methods: A retrospective review of men with a 11C-Choline PET/CT scan, a bone scan and PSA measurement within 30 days and during 2011, was completed. Each localized bone lesions from 11C-Choline PET/CT scan was measured for maximum standard uptake value (SUV) of 11C-Choline accumulation and the density (HU) of the bone. The relationship between SUV, density and visibility on bone scan of the bone lesion was assessed. Skeletal lesion identification and PSA level was analyzed. Results: In 38 Prostate cancer patients evaluated, the 11C-Choline PET/CT scans identified 85 bone lesions. The mean SUV max value of identified bone lesions was 4.7 ± 2.1 and the mean CTHU value was 268 ± 148. No correlation was shown between the SUV values and CTHU values using a bivariate analysis with linear regression ($R2=0.0046$, $p=0.65$). Of the 85 11C-Choline avid lesions, 46 were visible on the 99mTc-MDP bone scan. The SUV max values of the 46 lesions identified with the bone scan (mean SUV 5.33 ± 2.04) were statistically higher than those not diagnosed with the bone scan ($p=0.0021$). The HU values of bone scan positive lesions (mean 293 ± 155) were also higher than on choline PET only visible foci ($p=0.05$). The PSA for all patients ranged from 0.14 and 126 ng/ml and the mean for bone scan identified bone lesions was 7.07 ± 33.2 ng/ml, versus 7.09 ± 16.23 ng/ml in bone scan negative. When the PSA was <1.5 ng/ml, no bone lesions were detected by scintigraphy. Conclusions: The osseous lesions identified in prostate cancer patients by bone scanning have both higher 11C-Choline uptake and higher density

U.63 Isolating Verminephrobacter eiseniae

John Mladucky and Adam Vance
Advisor: Darby Oldenburg, Microbiology

Abstract. Verminephrobacter eiseniae is a bacterium found inside the common composting worm Eisenia foetida. V.eisenae was first reported in 2008 and has has been described as a vertically transmitted symbiont of E. foetida. Our study aimed to isolate V. eiseniae from the UW-L vermicomposting facility. V. eiseniae was isolated from worm nephridia and worm capsules via dissection and plating techniques. Using successive biochemical and molecular tests, V. eisenae was isolated and identified from the diverse population of bacteria in worm and worm capsules. This experiment sought to correctly use numerous techniques to identify and isolate this ill-defined microbe. Future studies will focus on learning more about the physiology of this microbe and the role it plays within the E. foetida nephrida.

U.64 Effect of steroid use during chemotherapy on SUV levels in PET/CT

Kate Raplinger
Advisor: Aileen Staffaroni, Nuclear Medicine Technology

Abstract. Objectives: Elevated serum glucose alters SUV values in normal and neoplastic tissue, and can be elevated by steroids. Therefore, we avoid performing 18F-FDG PET scans on patients with serum glucose levels greater than 200 mg/dL. Here we evaluated the effect of prednisone given as part of chemotherapy on physiologic FDG uptake, comparing cohorts of euglycemic and borderline hyperglycemic patients. Methods: A retrospective review of patients undergoing PET/CT for a new diagnosis of lymphoma from 2006-2011, who meet the criteria for our study, was performed. Patients were divided into a euglycemic group (EG) and a hyperglycemic group (HG) based on fasting glucose prior to initial PET/CT (cut-off 150 mg/dl). SUVmax was measured in the cerebellum, ascending aorta, liver, and the anterior compartment of both thighs before and during chemotherapy with prednisone. Serum glucose was checked before the follow-up PET/CT. Results: 20 patients were in the EG, and 16 patients were in the HG. In all patients (age: mean 60.0+/-14.0 years; 24 male), the mean increase in serum glucose was 24.6+/-28.0 mg/dL (all < 200 mg/dl). Among the EG, the glucose increase was less pronounced (5.2+/-14.6 mg/dL) than in the HG (48.8+/-20.8 mg/dL) (p<.0001). The difference in SUV values before and after prednisone usage, however, did not show a statistically significant difference between EG and HG in the aorta, liver or thigh. However, in the cerebellum a higher baseline glucose before treatment with prednisone was associated with a decrease in SUV after prednisone administration (mean difference euglycemic group: 0.69+/-2.3; hyperglycemic group: -1.16+/-2.6; p=0.03). Conclusions: SUV in patients undergoing treatment with corticosteroids should be comparable between their pretreatment and treatment PET/CT as long as the glucose is below 150 mg/dL. Our results suggest that glucose metabolism in tumors, which mimic cerebellar activity, may show an artificial drop in tumor metabolism (SUV) in patients undergoing corticosteroid treatment.

U.65 Effect of Fast Acting Subcutaneous Insulin on FDG PET Scans

Katelyn Schommer, Christopher Hunt, Geoffrey Johnson, and Patrick Peller
Advisor: Kimberly Chandler, Nuclear Medicine Mayo Clinic

Abstract. Effect of fast acting subcutaneous insulin on FDG PET scans Objectives: While FDG PET imaging is a useful diagnostic tool for staging cancer, in diabetic patients with blood glucose levels greater than 200 mg/dl, FDG remains within the blood competing for uptake into cancerous tissue. To drive excess glucose out of the blood and into the muscle and fat cells, patients can be given fast acting insulin prior to FDG administration. This study assesses if fast acting insulin causes an abnormal change in uptake of FDG within normal tissues. Methods: A retrospective review of patients receiving a FDG PET scan from 2010 to 2011 was conducted. Diabetic patients with a blood glucose above 200 mg/dl that were given fast acting insulin two hours prior to FDG injection and non-diabetic control patients with a normal blood glucose (less than 200 mg/dl) were compared. Standard uptake values (SUV) of the cerebellum, blood, liver, and muscle were measured. Results: The SUVs of 20 women and 30 men (age: mean 61 yr.; range 21-90) were analyzed. The mean glucose levels of diabetic patients after receiving insulin was 155 +/- 32.3 (n=25), and non-diabetic controls was 92 +/- 5.3 mg/dl (n=25). The following SUVs were calculated; thigh muscle (1.0 +/- 0.29 with insulin; 0.8 +/- 0.11 without insulin), cerebellum (6.5 +/- 1.5 with insulin; 8.0 +/- 1.4 without insulin), aortic blood pool (2.3 +/- 0.49 with insulin; 2.3 +/- 0.31 without insulin) and liver (2.9 +/- 0.70 with insulin; 2.9 +/- 0.45 without insulin). Conclusions: Diabetic patients receiving fast acting insulin had mild increased uptake of FDG in the thigh musculature (20.0% +/- 0.45%), decreased uptake in the cerebellum (18.75% +/- 1.2%), and no significant difference in uptake in the aortic blood or liver compared to non-diabetic control patients. The ratio of cerebellar activity to liver or blood activity mimics malignant tumor activity to background activity, therefore, the use of fast acting insulin should allow for an adequate FDG PET scan in diabetic patients with elevated blood glucose levels. Katelyn A Schommer, Kimberly J Chandler, Christopher H Hunt, Geoffrey B Johnson, Patrick J Peller

U.66 FDG PET evaluation of solitary Plasmacytoma

Kendra Klein, Christopher Hunt, Geoffrey Johnson, Patrick Peller
Advisor: Kimberly Chandler, Nuclear Medicine Mayo Clinic

Abstract. Objectives: Patients diagnosed with a solitary plasmacytoma can actually have multiple myeloma (MM). The purpose of this study is to measure how often patients presenting with a plasmacytoma have multiple lesions found on a PET/CT scan, quantify how active plasmacytomas are compared to normal tissues and evaluate whether high activity predicts multiple lesions. Methods: A retrospective review was conducted of patients undergoing a PET/CT scan for the indication of a solitary plasmacytoma between 1995- 2011. The report and PET/CT scan was reviewed to determine whether a solitary plasmacytoma or MM was present. A standard uptake value (SUV) was measured for the solitary plasmacytoma and analyzed for correlation to the MM diagnosis. The SUV of the liver was also tabulated. Results: This study identified 28 patients (19 males; 9 females) with a mean age of 58.7 years (range 24-77). A solitary plasmacytoma was found in 18 patients where the remainder of the PET/CT was negative. In 10 patients (35.7%) multiple lesions were found leading to the diagnosis of MM. The solitary plasmacytoma maximum SUVs varied over a wide range from 3.0 to 28.4 (mean 8.24 ± 6.11). The plasmacytomas were consistently more active than the patient's liver (mean 2.94 ± 0.50).). There was no correlation between the plasmacytoma SUV and the presence of multiple PET/CT lesions indicative of MM (p=0.85). Conclusion: Over one third of patients presenting with a solitary plasmacytoma have MM identified on PET/CT. The presence of high FDG uptake in the plasmacytoma does not predict the diagnosis of MM.

U.67 Synthesis of 2-Fluorobiphenyl Chromium Tricarbonyl and 2-Iodobiphenyl Chromium Tricarbonyl

Leah Kaufman
Advisor: Curtis Czerwinski, Chemistry

Abstract. Haptotropic rearrangement reactions involving organometallic molecules have the potential to be used in molecular devices, molecular wires, and molecular switches. A haptotropic rearrangement consists of the movement of a metal between two rings bonded to each other within the same molecule. Previous work done by our research group was successful in moving a Cr(CO)3 group from an electron-neutral ring to an electron-rich ring. This electron-rich ring was substituted with an "amino" (–NH2) group. In this project we originally intended to develop methodology for synthesizing a fluorobiphenyl chromium tricarbonyl isomer that has chromium coordinated to a fluorine-substituted ring. The fluorine acts as an electron-withdrawing group, making the ring it is attached to electron poor. Isolation of fluorobiphenyl chromium tricarbonyl would allow for measurement of the rate of haptotropic rearrangement from an electron-poor ring to an electron neutral ring. During this project we also became interested in the analogous iodo-compound. These compounds represent the large (iodo) and small (fluoro) extremes of 2-halobiphenyl chromium tricarbonyl compounds. Comparing these two compounds will provide important data regarding the interplay of steric and electronic effects in haptotropic rearrangements. Progress towards the synthesis of these compounds will be provided in this presentation.

U.68 Comparison of IQ•SPECT/CT with conventional SPECT/CT for myocardial perfusion imaging
Mackenzie Novak
Advisor: Carlyn Johnson, Nuclear Medicine/Ministry St. Joseph's Hospital/NMT Program

Abstract. OBJECTIVE: St. Joseph's Hospital recently purchased a new SPECT/CT system (Symbia T6, Siemens Medical Solutions, USA) with IQ•SPECT technology. This uses a cardio-centric orbit along with SMARTZOOM collimators, whereas conventional SPECT/CT uses a non-circular orbit and low energy high resolution collimators. The purpose of this research was to compare the images of patients who had undergone myocardial perfusion imaging (MPI) using both IQ•SPECT/CT and conventional SPECT/CT technology. METHODS: Forty patients that had MPI studies using both IQ•SPECT/CT and conventional SPECT/CT were selected and their images reviewed. The images from each system were scored as uniform or non-uniform. Three of these studies were presented as a blind read to two nuclear medicine physicians for comparison. The acquisition protocols for each system were also compared. The IQ•SPECT/CT parameters of 14-16 seconds per view for a total of 17 views allow images to be taken in 6 minutes. In comparison, the conventional SPECT/CT system using parameters of 20-25 seconds per view over 32 views completes images in 20 minutes. RESULTS: The results of the visual analysis showed 10 patients with uniform images using both IQ•SPECT/CT and conventional SPECT/CT. The remaining 30 patients exhibited uniform IQ•SPECT/CT images and non-uniform conventional SPECT/CT images. Images from the IQ•SPECT/CT protocol appear to have less defined myocardial edge lines. The blind read by the physicians showed conflicting impressions. One physician identified the IQ•SPECT/CT images as having smoother cardiac edges and no crisp margins, while the other physician thought the IQ•SPECT/CT images displayed sharper edges and greater detail. DISCUSSION: The results of the analysis are inconclusive. There were no consistent differences between images when using the visual analysis, therefore the acquisition parameters become a significant factor. Overall, the IQ•SPECT/CT was the preferred method because of the cardio-centric orbit and decreased imaging time without changing the quality of the image.

U.69 The effect of Tc99m Sestamibi dose reduction on image quality and patient radiation exposure
Patrick Melby
Advisor: Carlyn Johnson, Nuclear Medicine/Ministry St. Joseph's Hospital/NMT Program

Abstract. Objective: Ministry St. Joseph's Hospital recently purchased a new SPECT/CT system (Symbia T6, Siemens Medical Solutions, USA) with IQ•SPECT SMARTZOOM technology. The manufacturers for this system recommended lower Tc99m Sestamibi doses for myocardial perfusion imaging (MPI) than were currently being used at St. Joseph's Hospital. As of September 2011 our department instituted a new protocol for MPI that reduced the rest dose from 15mCi to 10mCi and the stress dose from 40mCi to 30mCi. The purpose of this study is to determine if a reduction of the Tc99m Sestamibi dose had an effect on the quality of the images and to examine the extent of decreased patient radiation exposure. Methods: Ten patients who had undergone an MPI before and after the dose reduction were evaluated. These patients had both MPI studies within two years with no significant cardiac changes. Four of the ten patients' images were presented to two nuclear medicine physicians for a blind read comparison. In addition, the radiation exposures of 100 patients were examined by extrapolating the total body exposure from the Tc99m Sestamibi package insert. These calculations were used to determine the reduction in radiation exposure to the patient. Results: The blind read resulted in the physicians finding no diagnostic difference between the images acquired before and after the Tc99m Sestamibi dose reduction. The study also found that there was an average decrease of 19% in patient radiation exposure. Conclusion: The images of the patients that had MPI studies under both protocols were considered diagnostically equivalent. The radiation exposure to the patients was reduced by 19% and still provided our physicians with high quality MPI images.

U.70 Relationships Between Single Leg Stepdown Positions and Lower Extremity Muscle Strength Measures
Allison Kubicek, Lauren Sedbrook, Joshua Demorett, Rachel Kersten
Advisor: Robert Ragan (Physics) and Thomas Kernozek (Physical Therapy)

Abstract. The single leg step down is often used in clinical settings to evaluate movement performance that are thought to be related to lower extremity injury mechanics. This study analyzed 2D angular positions of the lower extremities and pelvis of thirty females performing a single leg step down and correlated them with specific isometric strength measures. Digital photos were taken of 5 trials of single leg step downs of each leg from a frontal view. Angular positions were measured from these photos. Isometric strength was measured with a handheld dynamometer of the knee flexors/extensors, hip abductors, hip internal and external rotators. Pearson correlation coefficients were performed for all lower extremity position and strength measures. The greatest association existed between the non-dominant leg femoral angle and knee flexor strength (r=0.41) and non-dominant leg femoral angle and hip internal rotation strength (r=0.35). Overall, the correlations were weak between 2D frontal view position of the lower extremities and pelvis during a single leg step down and isometric lower extremity muscle strength in healthy participants.

U.71 What's on the line: The ecological economics of Asian carp

Lucas Purnell
Advisor: Ray Block, Political Science

Abstract. The Asian carp, a group of four invasive carp species (grass, silver, bighead, and black carps), has become a menace for state and federal bureaucracies. This nuisance species threatens the $7 billion fishing industry of the Great Lakes region. In response, numerous policies have been formulated in an attempt to mitigate the threat posed by this invasive species. While there is no disputing the significant threat to the economy, an effective analysis of the complete damage incurred must investigate the social and ecological aspects of this battle between man and wild. My research uses an ecological economics model to investigate the Asian carp issue. Results show that the ecological economics model is an effective tool in analyzing how invasive species impact America's well being.

U.72 Characterizations of the Antibacterial Drug SK-03-92 and MIC Testing of CL and SK-03-92 Analogs

Sara Medina-Bielski and Michelle Lane
Advisor: William Schwan, Microbiology

Abstract. Bacterial antibiotic resistance is a major health problem leading to failed treatment regimens. To counter antibiotic resistance, new drugs are needed. Previously, a drug named SK-03-92 was synthesized which presented broad activity against gram-positive bacteria. This study involved a further characterization of SK-03-92 as well as MIC testing of several additional drug analogs. To further characterize SK-03-92, mutation frequency determinations analysis of two transposon mutants with changed MICs against SK-03-92 and isolation of RNA from drug treated or untreated populations were performed. A mutation frequency of 3.07 x 10-8 was determined using Staphylococcus aureus MW2. The MICs of the two S. aureus RN4220 transposon mutants indicated that transposon mutant #40 had an MIC equal to RN4220, but transposon mutant #45 had a 16-fold lower MIC compared to the parent strain. Several attempts to clone DNA from transposon mutant #45 were unsuccessful. To determine how SK-03-92 affects gene expression in S. aureus MW2, one cell population was left untreated whereas the other population was treated with 4X MIC of SK-03-92. Total RNAs were extracted from both populations and several high quality preparations were made for future microarray work. In addition, Bacillus cereus, Enterococcus faecalis, Pseudomonas aeruginosa, and Escherichia coli were used for MIC testing of several SK-03-92 and CL drug analogs. All of the drugs tested against P. aeruginosa and E. coli had high MICs (>128 mg/ml). However, the MICs for E. faecalis and B. cereus ranged from 1 to >128 mg/ml. From all the CL-analogs tested, none were more effective than SK-03-92. The resistance frequency of SK-03-92 and the future microarray work with both RNA populations move the new drug closer to clinical use.

U.73 Orphanage Outreach Worker's Knowledge of Reactive Attachment Disorder: Is Current Training Sufficient?

Francesca Bautista
Advisor: Betty De Boer, School Psychology

Abstract. Reactive attachment disorder can develop from early experiences of severe neglect, abuse and/or frequent changes in caregivers. Common symptoms include failing to make proper attachments to caregivers, demonstrating behavioral difficulties in social contexts, experiencing a constant state of fear, as well as demonstrating other challenging behaviors. Children found in orphanages commonly come from backgrounds consistent with those found in children diagnosed with reactive attachment disorder. This research aimed to assess orphanage outreach volunteers' knowledge of reactive attachment disorder. The research was conducted at an orphanage in Jaibon, Dominican Republic that was home to 21 orphans. Fourteen American volunteers completed a knowledge survey on reactive attachment disorder. The results showed that the volunteer's knowledge of reactive attachment disorder was extremely low. Participants accurately reported that their knowledge was extremely low. Future research may evaluate whether additional training on reactive attachment disorder would improve the ability of volunteers to improve services in Dominican orphanages.

U.74 Reely Wrong: Reactions to Inaccurate Portrayals of Schizophrenia in Film

Caylie Yessa and Sigrid Splinter
Advisor: Casey Tobin, Psychology

Abstract. Film and television portrayals of mentally ill individuals have been found to be largely negative and overly linked to violent acts (Kort-Butler & Hartshorn, 2011). Consequently, we are interested in comparing negative portrayals with more balanced portrayals in terms of how respondents react to media representations of mental illness. Research conducted by Corrigan, Larson, Sells, Niessen and Watson found mentally ill people are portrayed in film as violent, unattractive, dangerous and burdensome individuals (2007). Our research is based upon two social scientific theories that help explain why media serves to perpetuate stereotypes. Framing theory argues media serves to "frame" a message by providing the same message repeatedly in the same manner (Sieff, 2003). Cultivation theory argues prolonged exposure to messages within the media creates a "standard" symbolic culture which can then affect behaviors, beliefs, and attitudes (Hammermeister, Brock, Winterstein & Page, 2005). When these two theories are combined, a more complete picture is created to explain how people create beliefs about certain content, and how these beliefs transfer into behaviors and attitudes. The purpose of this study is to examine the effects of accuracy in negative and neutral film clips on the level of interest, empathy, and perceived outcome for individuals with schizophrenia. One hundred and thirteen undergraduate students between the ages of 18 and 22 were randomly assigned to one of six conditions. The participants viewed either a balanced or negative clip and were given accurate, inaccurate or no information about schizophrenia. After watching the clips, respondents completed a measure regarding the film and the portrayal including their level of interest in the film, level of empathy toward the individuals, and perceived life satisfaction for the individual. A follow-up questionnaire was distributed two weeks after the initial study to examine whether the negative or neutral information was better retained.

U.75 Inspiration through Meaningful Education: Understanding Existential Motivators

Jeffrey Albrecht
Advisor: Tesia Marshik, Psychology

Abstract. Improving graduation and retention rates in post-secondary educational institutions is a persistent challenge for Americans in the 21st Century. Numerous educational theorists and philosophers including Dewey, Montessori, and Frankl, have argued that it is important for students to perceive the personal relevance of what they're learning and to feel inspired by the material and/or their teachers in order for students to be motivated and to succeed academically. This study empirically investigated the relationships among college students' GPA, intentions to persist, academic inspiration, meaning in life, and perceptions of educational relevance. In addition, this study investigated the predictive power of meaning in life and student perceptions of educational relevance on academic inspiration. 108 undergraduate students completed an online survey that consisted of quantitative and qualitative measures, providing insight into both the frequency and quality of academically-related inspirational experiences. Results demonstrated that meaning in life was a significant predictor of students' intentions to persist. Further, students' perceived educational relevance and meaning in life were significant predictors of overall academic inspiration. Thus, it was concluded that meaning in life is a useful predictor of students' intentions to persist. Further, it was concluded that meaning in life and perceived relevance of curricula were useful constructs for predicting academic inspiration. Future studies might further investigate for a causal relationship between meaning in life and intentions to persist to support efforts in increasing college retention rates. Future studies might look for causal relationships between meaning in life, perceived educational relevance, and academic inspiration in efforts to design curricula that will be more engaging and meaningful for students.

U.76 Can Marathon Running Make You High?: Differences in Mood between Short- and Long-Distance Runners

Jennah Arndt
Advisor: Katherine Kortenkamp, Psychology

Abstract. This study investigated mood differences between short- and long-distance runners and walkers pre- and post-race. This study also examined the relationship between mood states and occurrence of a runner's high. Preliminary analyses showed a significant increase in positive mood and runner's high experiences as race distance and intensity increased.

U.77 That's Not Who I Thought You Were: Stability of First Impressions

Kelsey Greenwood and Sarah Branson
Advisor: Bianca Basten Psychology

Abstract. The initial impressions we form about individuals occur unconsciously, instantaneously. People often assume that brief samples of behavior accurately represent underlying character traits. Based on experience, people learn to associate commonly co-occurring behaviors with overarching traits, and thus make inferences about stable characteristics. The direction of initial impression (positive vs. negative) influences subsequent interactions. Research shows that negative information is more influential in overall perception of that individual. Using a Qualtrics survey, participants will read positive or negative trait descriptions followed by incongruent behavioral information in increasing amounts. Participants will rate overall perceptions of the individual after both sets of information. We predict that first impressions will be more stable when they are initially negative and when presented with fewer incongruent behavioral examples.

U.78 A Unified Perceptual Experience: Measuring the Temporal Window of Audio-Visual Binding

Jared Peterson
Advisor: Alex O'Brien and Bart VanVoorhis, Psychology

Abstract. Evidence suggests that the human perceptual system temporally “binds” incoming sensations that arrive within very close proximity of one another. In other words, if the sensory system receives two incoming stimuli in close enough temporal proximity, the two stimuli are perceived as a single event, rather than as two individual events. This is true for sensations arriving via the same modality (e.g., two visual, or two auditory stimuli), as well as for sensations arriving via different modalities (e.g., a visual stimulus and an auditory stimulus). Despite abundant existing literature verifying the existence of temporal binding, few studies have looked at the specific time course, or "window" of temporal binding across senses. In the current study, participants viewed a video of a balloon popping, and heard the sound of the balloon pop either with the visual pop, or at various times prior to, or following the visual pop. Preliminary results suggest that the human perceptual system will “temporally bind” the two stimuli if they arrive within approximately 700 ms of one another, and that this binding occurs to a greater extent when the visual stimulus precedes the auditory stimulus, rather than the auditory stimulus preceding the visual stimulus.

U.79 Risky Business: The Influence of Affect on Risk-Perception and Risk-Taking

Vanessa Schwartz
Advisor: Bianca Basten

Abstract. Individuals often weigh the costs and benefits of a decision in order to make an educated choice; however, what is the role of emotion in this process? Are today’s youth making riskier decisions when they are in heightened emotional states? Studies have shown that emotional response to information influences how individuals perceive the information and its presentation (Slovic et al., 2005). Furthermore, previous research suggests that heightened affective states, regardless of whether they are positive or negative, are associated with riskier decision-making (Bruyneel et al., 2009). This study examines how affect influences risk-perception and risk-taking in adolescents and young adults. In a society where the media is full of stories of youth making irrational and dangerous decisions, learning more about the reasoning behind risky actions has both scientific and practical implications. Participants include 7th and 8th graders as well as college-aged individuals. Participants are randomly assigned to one of three conditions of affect; neutral, sad or physiologically aroused which is induced through the use of power points and exercise. A manipulation check is conducted with the use of the Positive Affect, Negative Affect Scale (PANAS). Each participant’s perception of risk is assessed through the use of a modified Benthin Risk Perception Measure. Risk-taking is assessed using the Balloon Analogue Risk Task (BART). Preliminary data was analyzed with ANOVA and suggests that results show, as with previous research, that adult individuals in a sad affective state perceive more risk in a specific scenario than individuals in a neutral or physiologically aroused affective state. Furthermore, preliminary results also show that adult individuals in sad and physiologically aroused affective states exhibit more risk-taking than those in the neutral affective state. I expect that the adolescent participants will produce the same results.

U.80 "I think I can, I think I can!": The effects of visualization on task performance
Amy Jo Garinger and Chelsea Ophime
Advisor: Alex O'Brien, Psychology

Abstract. Many individuals utilize mental visualization as a method for improving performance on a variety of tasks. Three studies investigated the effects of visualization on task performance. Study 1 looked at the effects of visualization on gross motor tasks, specifically the agility ladder drill. Study 2 looked at the effects of visualization on musical performance, specifically, playing a melody in a standard key on the participant's instrument of expertise. Study 3 looked at the effects of visualization on keyboarding.

U.81 Sustainable La Crosse: A Network Analysis of Gundersen Lutheran and Their Community Partners
Jared Bender
Advisor: Jo Arney, Public Administration

Abstract. Gundersen Lutheran is seeking to be 100 percent energy efficient by 2014. A network analysis of Gundersen Lutheran and its community partners will take a look at whose waste bi-products can be effectively recycled to provide renewable energy for Gundersen Lutheran. Examination of how effective these businesses can be at reducing both their energy consumption and bi-product disposal costs will be used in an attempt to provide an example for other communities who are seeking to become more environmentally friendly.

U.82 Theatre Workshops to Promote Learning and Collaboration
Laura Paulson
Advisor: Beth Cherne, Theatre

Abstract. Viola Spolin is the leader in Improvisational techniques and games for the theatre who outlines several techniques in her book Theatre Games for the Classroom that help students to learn and grow. I am using a specific sequence of her techniques to develop my own workshop. This workshop will focus on developing children's problem solving and group interaction skills. I have presented this workshop at several schools in order to promote learning through theatre and also test how these techniques work for students.

U.83 A Comparison of Recreation Activities Offered to People with Disabilities in Recreation Settings in La Crosse, Wisconsin and Atenas, Costa Rica
Kelsey Anderson
Advisor: Patricia Ardovino, Therapeutic Recreation

Abstract. The purpose of this research is to compare recreation services provided to people with disabilities in the US and Costa Rica. While comparisons of services are available with facilities in Canada, it appears that no comparisons have been made with facilities in Costa Rica (Bullock & Mahon, 1999). Observations and interviews were conducted with personnel from Riverfront Inc. in La Crosse, WI and El Centro Community Center in Atenas, Costa Rica. Information was obtained from observations and interviews. Personnel at Riverfront Inc. reported having a larger variety of recreational activities offered to people with disabilities. Personnel at El Centro Community Center in Atenas, Costa Rica reported having limited funds to provide recreation activities for persons with disabilities. Both facilities reported having the same overall goal: to help the clients improve quality of life, increase overall functioning, and have fun.

U.84 Stability Contributions of Hydrogen Bonds in the Third Circuit of Hemolysin A from Proteus mirabilis
Matthew Mauseth
Advisor: Todd Weaver, Chemistry and Biochemsitry

Abstract. In this study, the role of unique intra-molecular hydrogen bonds at the third circuit of truncated Hemolysin A (HpmA265) was investigated. HpmA265 harbors a beta-helix structure, hallmarked by wrapping of parallel, beta-strands around a central and largely hydrophobic core. The tight packing of beta-strands in the beta-helix pattern provides a stable structure via inter-strand hydrogen bonding networks. A series of site-directed mutants within the three beta-arcs of the third circuit have been designed and engineered to investigate the structural and functional contributions of hydrogen bonding in HpmA265. Circular dichroism (CD) spectroscopy and template-assisted hemolytic activity assays have revealed differences in thermal stability and activity between these mutants.

U.102 Made in China: Developing the Sustainable Through Local Voices of a Sichuanese Eco-Village
Adam Blatter
Advisor: Christine Hippert, Anthropology\

China does not go unnoticed with respect to economic development. In just this past year conservative statistics estimate 2011 GDP for China at 9.2 percent, according China as the most rapidly developing capitalist economy on the global stage today. But concomitantly the United States, and other predominantly "developed" Western countries have, over the past few decades, grown to question the sustainability of their very own model of economic development. In fact, the pressing fears have grown to fruition as a concerted effort by the United Nations with the Millennium Development Goals, goal 7 reading: *"Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources"*. But what is presently less known is that many countries, including China, have had a rich history of small-scale local movements that oppose the paradigm of present global modernization in favor of experimentation with sustainable alternatives. This project is a case study focusing on one such effort currently unfolding at the village level in Sichuan Province. For the past decade villagers in *Anlong* (安龙) village have worked in concert with local NGOs to confront problems of environmental and human health by cleaning up the *Zou Ma* River (走马河). My research during the summer of 2011 focused on this effort, and through use of participant observation, I reveal how villagers work with NGO-level mediators to articulate new voices of identity while simultaneously effecting local and national perceptions of environment, historical narrative, and "sustainable" livelihood.

UNDERGRADUATE ORAL PRESENTATION ABSTRACTS

UR.1 All-American Man of Steel: The Superman Radio Show and the Japanese during World War II
Sean Mobley
Advisor: Mike Tollefson, Communication Studies

Abstract. "In my experience, the words 'Japanese' and 'honor' don't go together." Thus spoke Superman on his radio show, the paragon of Truth, Justice, and the American Way in 1942, during the heat of World War II. The Adventures of Superman, a radio show broadcast from 1940 – 1951, was one of the most popular and successful young adult programs of the Golden Age of Radio. During the war, the writers of the show featured German and Japanese villains as the primary enemies of the American Way. Japanese and Japanese-American characters specifically received a very negative stereotypical portrayal, referring to them using derogative language and featuring actors using thick "Asian" accents. To children of the war era, there could be no question: the Japanese were irredeemably evil. The end of the war brought with it a shift in values for the advertisers behind the show and the characters changed to reflect a new post-war moralism. Almost overnight, the show went from villainizing Japanese-Americans to vindicating them, celebrating the actions of "brave Americans who infiltrated the Japanese forces," risking their life to secure victory. This paper investigates the thematic messages in the Adventures of Superman about Japanese and Japanese-Americans during and after World War II. It investigates the motives behind the shift in portrayal and analyzes the change through the lens of Burke's theories on Comedy and Tragedy.

UR.2 Substance Use and Risky Sexual Behavior among High School Students: A Partial Test of the Ecological Risk Factor Model
Ethan Rogers
Advisor: Nicholas Bakken, Sociology

Abstract. Risky sexual behavior among adolescents is a problem that requires adequate empirical attention from academics and policy makers considering the high rates of unintended pregnancies and spread of sexually transmitted diseases. Prior studies have illustrated that there are many significant predictors of various risky sexual behaviors. The goal of the current study was to add to that literature by analyzing the relationships between several independent variables, including substance use, academic achievement, depression, and television viewing and risky sexual behavior. To help achieve this goal, a partial test of the ecological risk factor model was also performed. Taken from the Youth Risk Behavior Survey, responses of 9th through 12th grade students in the United States were analyzed through examining univariate, bivariate, and multivariate analyses, including logistic and ordinal regression. Results showed significant relationships between several risk factors and risky sexual behavior. Program and policy recommendations are discussed.

UR.3 Measuring the spatial distribution of lead contaminants in the La Crosse River Marsh

Sara Erickson
Advisor: Colin Belby and Ryan Perroy, Geography and Earth Science

Abstract. The La Crosse River Marsh is a 1,077 acre urban wetland located in the heart of La Crosse, WI. From 1932 to 1963 the La Crosse Gun Club resided on the shores of the La Crosse River Marsh; in this time, large quantities of lead shot were projected in and around the marsh making lead contamination a potential concern to the hundreds of animals which utilize this area. The purpose of this research is to quantify the spatial distribution of lead contaminants in the La Crosse River Marsh. Using differential Global Positioning System (GPS) and Geographic Information System (GIS) technology, a 20 x 20 meter grid covering the expected shot fallout zone was created within the marsh and 432 sample points were identified. Surface sediment was collected at each sample point and processed in the lab through drying and grinding methods. All samples were analyzed for lead and other heavy metals via X-ray fluorescence at the University of Wisconsin – La Crosse, with 10% of the samples also analyzed externally via inductively coupled plasma (ICP) analysis. Lead levels in the surface sediment range from 2 to 22,950 ppm, with the greatest concentrations found in the shot fall zone 180-300 m from the former trap stations. The Environmental Protection Agency's minimum standard for lead in bare soil in which children play in is 400 ppm while other non-play areas are 1,200 ppm. Results from this study helped to create a three-dimensional map of lead contamination within the La Crosse River Marsh and provided the framework for future studies looking at impacts on the vegetation, invertebrates, and water column.

UR.4 Early Hominin Evolution and the Transition to Bipedal Locomotion in Humans

Sarah Sodemann
Advisor: Timothy McAndrews, Archaeology

Abstract. The transition to bipedal locomotion in humans has been the source of much research and debate over the years, in particular, the question of why it occurred. Many theories have been put forward to explain what the evolutionary force driving this shift in locomotion was, but more than just one is likely responsible for such a dramatic change. For this study, the bone morphology of early hominin fossils is examined in an attempt to determine which particular evolutionary forces had the largest impact on the transition from an arboreal lifestyle to the bipedal one seen in modern humans.

UR.5 Characterization of the Performance of Quantum Dot, Optically Gated, Field-Effect Transistor Single-Photon Detectors as a function of Operating Temperature and Detection Rate

John Nehls
Advisor: Eric J. Gansen, Physics

Abstract. Technological advances in single-photon detection may lead to paradigm shifts in the ways we manipulate and transmit data. For example, it is individual photons of light that carry information in ultra-secure quantum cryptography systems that are being developed to safeguard electronic transactions in banking and commerce. Also, while today's computers use electrical signals to process information, future quantum computers may employ individual photons to perform operations. The quantum computer is the 'Holy Grail' of quantum technology and is highly sought after because of its potential to perform specific time-intensive algorithms. While traditional detectors based on avalanche gain are drawing considerable research interest, I, in collaboration with NIST-Boulder, am developing an entirely different class of detectors that makes use of quantum dots (QDs) - tiny islands of semiconductor material with nanometer-scale dimensions. In these detectors, QDs are embedded in a specially designed transistor. Previous studies have shown that when cooled to 4 Kelvin our QD-based detectors can sense individual photons that arrive at a rate of about one per second; however, real-world applications demand devices that can detect millions of photons per second and that are tolerant to temperature fluctuations. Here, I present an experimental study, where I track how the sensitivity of our detectors varies with detection rate and temperature. I show that these devices can operate at technologically relevant speeds and over a broad range of temperatures. I also explain the mechanisms that limit their performance and discuss the future of this important application of nanotechnology.

UR.6 Land snail community diversity in the Driftless region of Wisconsin

Christopher Lynum
Advisor: Kathryn Perez, Biology

Abstract. The terrestrial snails of North America are a diverse and threatened group, but conservation status of the majority of species is uncertain. There are ~100 species of land snails in Wisconsin and several habitats are known to have globally significant levels of land snail species richness, however, most are minute (<5 mm) and their distributions and ecologies are poorly known. The survey of land snails in the Driftless region, an area free of ice during the last glaciations period, is being done not only to identify the locations of the 21 land snail species of conservation need but also to discover the variables driving land snail diversity and compare these variables in other regions to test the similarities with communities outside of the Driftless area. Georeferenced museum records were used to create a GIS model which incorporated sites with high gastropod richness with environmental information. Areas identified by the GIS model as highest priority were targeted for surveys along with a few low priority areas to ground-test the model. At each site there was a minimum 30 minute visual search for macrosnails and at least 2m2 of leaf litter were gathered to sieve for microsnails. Environmental data such as slope, ground cover, and canopy cover were taken at each habitat in the site. The leaf litter was washed to remove sediment, air dried, and put through a series of sieves to separate coarse organic matter from the microsnails. After sieving, the litter is searched twice under a low-power dissecting microscope and the snails are collected, sorted, and identified to species. These surveys have resulted in discovery of several new populations and a large range extension for a state threatened species such as Hendersonia occulta, the cherrystone drop snail.

UR.7 The Effect of Migrant Experiences in the United States on Family Dynamics in Mexico

Angela Rooker
Advisor: Christine Hippert, Sociology/Archaeology

Abstract. While migration studies have examined the adaptations migrants must make to survive in the US and those that their families in Mexico must make in the meantime, few have looked into the adjustments that must be made when the migrant returns home to Mexico. The purpose of this research was to investigate the effects of a migrant's exposure to the culture of the United States on his/her family dynamics once he/she returned to Mexico. This project examines the relationships between different members of the family before and after one or more members migrated to the United States. I believe since the United States and Mexico have very different ideals for family dynamics, if a person is exposed to the culture of the United States, than he/she is more likely to have conflicts with family members upon returning home due to differences between the cultural norms of the two countries. In order to test this hypothesis, fifteen semi-structured interviews focusing on familial relationships before, during, and after the subject's migration were conducted. The subject's family members that had remained behind in Mexico were also interviewed. Thirteen such interviews were conducted. With the subject's permission, these interviews were recorded while field notes were also taken. The data suggests that the longer the migrant stays in the US, the longer both the migrant and his/her family need to adjust. Responses also seem to indicate that males have a harder time returning to life in Mexico then females. Children are the most affected by the transition taking longer to the absence and return of the migrant(s). These results suggest that migration does affect family relationships for everyone, not just those who leave. /

UR.8 What is eating you?: Food consumption among students in relation to stress, anxiety, depression, and coping skills.

Briana Tong
Advisor: Jocelyn Newton, Psychology

Abstract. Lifestyles such as dietary habits and patterns of food consumption can influence health, mental health, and mortality. Associations between anxiety symptomology and disordered eating behavior have been observed in both men and women; unlike depression, which is primarily seen among college women and dysregulated eating behaviors. Past studies have shown that over 60% of college students reported having high levels of stress due to their academic demands, and their inability to cope with these stressors have often lead to problematic eating behaviors. The purpose of this study was to further investigate how the college culture influences eating behavior among college students in relation to perceived stress, anxiety, depression, and poor coping skills. The goal was to determine the best predictor of poor eating habits in college students. A total of 94 undergraduate students completed a food frequency questionnaire, perceived stress scale, coping skills, anxiety, and depression inventories. Findings revealed that healthy eating behavior was significantly correlated with anxiety, but not with coping skills, perceived stress, and depression. Linear regression analyses revealed that the four affective variables did not significantly predict healthy eating behavior. Finally, results indicated that college students were not consuming the adequate servings of fruits/vegetables, dairy, and grains, but students were consuming the adequate amount of servings for proteins as recommended by the USDA. Clinical implications for these findings and recommendations for a healthy lifestyle with regard to dietary habits will be discussed.

UR.9 Structure function differentiation of Hemolysin A beta-edge variants using multi-angle light scattering

Jim McDermott
Advisor: Todd Weaver, Biochemistry and Chemistry

Abstract. In this study, the role of molecular organization was investigated as related to hemolysin A (HpmA265) template-assisted behavior. Previous studies have shown that full-length HpmA can be activated through interaction with purified HpmA265 in template-assisted fashion. HpmA265 was analyzed via template-assisted hemolysis, circular-dichroism, size-exclusion chromatography and multi-angle light scattering (SEC-MALS) before and after tryptic digestion. The results from these investigations were utilized to determine the absolute molecular weight of the template-assisted active species. The pre-tryptic digestion data reported a heterogeneous mixture of HpmA265 monomer and dimer. Quantitative hemolytic assays have determined the monomer to be the molecularly active species. Subsequent tryptic digestion, followed by SEC-MALS, generated a homogenous dimeric species with enhanced template-assisted behavior and thermal stability. From these data, a new model for template-assisted activity has been developed where exposed, homogenous, and monomeric on-edge beta-strands of HpmA265 facilitate the activation of full-length HpmA. These findings are significant and may apply to other beta-helix protein dependent disease states like Alzheimer's, Parkinson's and transmittable prion disorders. National Science Foundation Grant (MCB0744754) and (MCB1050435) supported the work.

UR.10 The World Is Yours: Undergraduates, New Freedom & Social Agency

Bryan Zinschlag
Advisor: Michael Brennan, Sociology

Abstract. The traditional undergraduate student is between ages 18 and 23 and not long-removed from the structured nature of both high school and living with their parents or guardians. They have much less supervision; at the same time they are expected to complete rigorous coursework and plan their impending future. The Purpose of the research is to explore how undergraduate students at the University of Wisconsin – La Crosse negotiate their transition into college life, a time of newfound freedoms and responsibilities that often conflict with each other. The data was gathered through semi-structured interviews of individual students. The interview process explored their perceived social agency (autonomy), particularly how it has changed since they moved away from home. When students reported any lack of perceived agency a discussion followed, covering various social structures or other forces (finances, religious belief, fate, etc.) and the limits they impose on students' lives. Student interviewees responded in accordance with recent literature regarding young adults and social agency. The students felt very much in control of their lives, limited by only those responsibilities they assigned to themselves. As children of middle-class families they reported little financial restraint. The majority acknowledged strong religious backgrounds, but denied any absolute prescription to a specific moral code. Religion, family and other social structures are perceived as resources for the students who, as social agents, ultimately decide for themselves.

UR.11 Understanding Hmong Culture, Recreation, and Leisure Activities to Provide Quality Care Services

Yang Cha Thao
Advisor: Jearold Holland, Therapeutic Recreation

Abstract. Cultural competence is a vehicle in the health field, in this case, in the Therapeutic Recreation (TR) field, to increase access to quality care for all patient populations. As the United States continues to celebrate a diverse population, cultural competency becomes an increasingly important aspect across professional careers. Methodologies such as interviews and surveys are used to explore certain elements of the Hmong culture, recreation and leisure activities, and how their beliefs impact the TR profession. With the collected information, TR professionals will be able to enhance their understanding of the Hmong culture to provide quality care services.

UR.12 A Practical Application to Relative Strength

Matt Nighbor
Advisor: Shane Van Dalsem, Finance

Abstract. Relative strength can be summarized as a performance comparison between multiple securities over a given period of time. This comparison can then be used to identify the strongest upward trending securities giving an investor a better chance at picking winning investments. This study attempted to create a portfolio of ETFs using relative strength that could outperform a buy and hold strategy of major indexes, such as the S&P 500. The portfolio was created by scanning different classes of ETFs every two weeks and purchasing only those that were found to be statistically significant, using a 92 day moving average. The research examines a five year period from 2007-2011 and the results show that this method can produce a superior portfolio over a long period of time, even when considering transaction costs and other fees.

UR.13 French in the Face of Arabization: Language Attitudes Among High School Students in Rabat

Janet Yearous
Advisor: Jennifer Howell, French

Abstract. Since independence from France in 1956, Morocco has utilized an Arabization education policy which attempts to remove the French language in favor of Arabic. This study investigates the effects of Arabization on high school students in Rabat, Morocco. In an effort to gauge the presence of French and Arabic in education, 50 high school students were interviewed from the capital, Rabat, and surrounding suburbs in May and June, 2011. High school students were selected since they are in the midst of forming their own identities and are also seriously considering how they will contribute to society as adults. Their perspectives and language identity will greatly influence the linguistic situation in Morocco. Results indicated that although the high school students interviewed had received an Arabized education, French continues to hold a significant linguistic presence in Morocco. Additionally, the results demonstrated that students hold both positive and negative attitudes toward French. On one hand, French acquisition could allow students to move abroad, while on the other hand, French is also a remnant of colonization, a bitter subject to some Moroccans. The results of this study will be of interest to teachers of modern languages and persons involved in language planning in multilingual countries. Additionally, this study's findings could contribute to the partial solution of serious language education problems faced in African countries like Morocco where the literacy rate remains just above 50%. Finally, as countries such as Morocco, a liberal Islamic nation, attempt to balance the increasing pressures of globalization while retaining connections to its rich past, studies such as this one could help nations develop successful language education programs.

UR.14 Describing Dwight: Examining Levels of Abstraction in Written and Spoken Language

Austin MacKenzie
Advisor: Alexander O'Brien, Psychology

Abstract. Do people communicate in a fundamentally more abstract way when writing than when speaking? In other words, do people inherently use concrete terms, like "hit," more often while speaking and abstract terms, like "attack," more often while writing? Abstraction is the level of detail inherent in word choice. If a communication sender states that one individual hit another, it provides much more detail than if the sender states that the individual attacked the other. Such a simple change could have drastic consequences in criminal trials, doctor/patient interactions, and other situations in which a communication sender may find it very important to limit or broaden a receiver's interpretation of a message. The Linguistic Category Model, developed by G. R. Semin and K. Fiedler in 1988, has a robust record of use in analysis of abstraction in social psychology. It is commonly employed in examining in-group/out-group behavior. However, the model is equally valid in any measure of abstraction based on a descriptive communication but no studies have yet examined the effect of communication channel on abstraction. To determine if there is any significant difference in abstraction level between written and spoken messages, 25 students from the University of Wisconsin—La Crosse viewed a short clip of the television series The Office and provided either a written or spoken description of the character Dwight. Each report was then coded using the Linguistic Category Model and analyzed to determine its average level of abstraction. A t-test was performed to determine that the mean average abstraction level of descriptions was higher in the written condition than in the spoken condition, $t(23) = -3.604$, $p = .001$. Since abstraction is a measure of implicit detail, these findings indicate that participants in the spoken condition may have actually been experiencing a more concrete, detail-rich thought process.

UR.15 Sexually Explicit Lyrics and their Influence on Jamaican Adolescents' Perceptions and Attitudes about Sex

Donica Spence
Advisor: Christine Hippert, Sociology and Archaeology

Abstract. This project investigates the perception of sex and sexual behaviors of adolescents in the context of a culture which is exposed to overtly sexual lyrics. A majority of Jamaican youth ages 12-14 are not shielded from sexual content, and they are generally taught sex education through schooling. With very few sources for guidance and information, it is pertinent to evaluate the effects of music lyrics on adolescents' sexual mores. There are countless cases of music lyrics reflecting the homophobic actions of Jamaicans, but is there a connection between the music and sexual beliefs of Jamaican youth. I have conducted a content analysis, educator interviews, and student focus groups to gather data which will help existing health/sex education programs cover a wider range of teens' influences.

UR.16 Greeks in Ptolemaic Egypt: Inter-cultural Influences in Naukratis

Simon Payne
Advisor: David A. Anderson, Sociology and Archaeology

Abstract. After the death of Alexander the Great in 332 B.C., a Ptolemaic dynasty of ethnic Greeks ruled Egypt until Rome's conquest in the 1st century B.C. This study will analyze the interactions between Greek colonists and native Egyptians at the site of Naukratis through the material remains found there. Initial excavations by Petrie and Gardener will be discussed as well as recent ones by Coulson and Leonard. This study aims to understand any change in material use of household goods by the Egyptians and Greeks living in the city by comparing them to a paradigm of typical Egyptian goods at the time. Possible changes in behavior seen from these artifacts will be addressed.

UR.17 Physical Intimacy and Equity in the Maintenance of College Students' Romantic Relationships

Andrea Turtenwald
Advisor: Carol Miller, Sociology and Archaeology

Abstract. Intimate relationships are complex and multifaceted, and current Sociological research has demonstrated which behaviors can sustain these partnerships. Utilizing Pistole et al.'s findings (2010) as a framework, the present study sought to gather qualitative data regarding seven maintenance behaviors, including: openness, positivity, conflict management, assurances, advice, shared tasks, and shared social networks. Analyses of qualitative data gathered through an online survey of five long-distance and five geographically close couples reaffirmed the significance of the seven maintenance behaviors listed above. However, two additional points of interest surfaced throughout the responses, the topics of physical intimacy and equal sacrifices. The present study provides an analysis of the significance of physical intimacy and equity of sacrifices in the maintenance of the relationships in the sample.

UR.18 Abnormal Production of CD43 in Lung Cancer

Greta Foley
Advisor: Carl Simon Shelley, Gundersen Lutheran Oncology Research

Abstract. Despite major advances in the field of medical oncology, lung cancer is still the leading cause of cancer death in the United States. Each year, lung cancer kills more people than breast, prostate, colorectal, liver and ovarian cancers combined. In this study, there were two major types of lung cancer examined: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). Along with the SCLC, there were three histologic subtypes of NSCLC tested: squamous cell carcinoma, adenocarcinoma, and carcinoid tumor. Using these different sub-types of lung cancer, the presence of CD43 on malignant lung tissue was observed. CD43 is an anti-adhesion molecule that is normally only expressed on the surface of white blood cells and never by lung tissue. However, earlier studies have found that CD43 may be expressed on certain malignant cells. Unlike normal lung tissue, malignant lung tissue may produce CD43. This hypothesis was tested by correlating immunohistochemical scoring of CD43 expression with each histological class of lung cancer. 105 cases of lung cancer were examined. The cells were tested for an extracellular domain of CD43 and an intracellular domain of CD43, along with an IgG stain as a negative control. The slides were scored according to the degree of positive stain present. It was found that expression of CD43 varies between the sub-types. Overall, the lung cancer cells were over 75% positive for the presence of CD43. These results confirmed that CD43 is abnormally expressed on the surface of malignant lung cells. This may also create new sub-types of lung cancer based on molecular differences. These results suggest a possible diagnostic and therapeutic tool in the fight against lung cancer.

UR.19 Utilizing a Private Collection to Explain the Variation Present in Turn of the Century Wrenches, Spark Plugs, and Corn Huskers

Mitchell Johnson
Advisor: Joseph Tiffany, Sociology and Archaeology

Abstract. While archaeologists and private collectors frequently vary in their approach to studying and recovering information about the past, both groups undoubtedly represent great sources of knowledge. By sharing in each other's knowledge our understanding of the past can only be improved. The vast majority of the best preserved Midwestern turn of the century farming artifacts are in the hands of private collectors. The collector's eye seems almost attuned to gathering the varied and the unusual. With both of these facts in mind, a private collection is the likely best source for investigating not only the variation that is present in past tool types but also for explaining the sources of these variations. This study focuses on three broad categories of a turn of the century farming collection containing more than 40,000 total items. These categories are: wrenches, spark plugs, and corn huskers. Within each category, samples were taken to be representation of the variation present in the collection. Repeated interviews with the collection's owner, utilization of collector's guides, original sales material, and historical documentation has yielded a comprehensive explanation of the enormous variation present in these artifacts. Due to the increasing age of the majority of these collectors, such investigations should be an immediate concern before an entire generation of knowledge is essentially lost.

UR.20 Student Perceptions of LGBT Safety in Rural Wisconsin High Schools

Karyn Cecele
Advisor: Tracy Caravella, Health Education and Health Promotion

Abstract. The purpose of this qualitative study is to find out how young adults recall their perceptions of the safety of lesbian, gay, bisexual and transgender (LGBT) students in rural Wisconsin high schools. Three subjects that graduated from rural Wisconsin high schools in May of 2011 were interviewed. One subject identified as other than heterosexual and was out in high school; one subject identified as other than heterosexual and was not out in high school; and one subject identified as heterosexual. Perceptions of safety varied depending on sexual orientation identification and the perceived stance of school administration on LGBT bullying. Normalization of varying sexual orientations by open conversation between adults and students and inclusion of various sexual orientations in curriculum were identified as critical ways to reduce perceptions of safety among LGBT high school students.

UR.21 Misconceptions and Difficulties in College Algebra

Julius Starlin
Advisor: Jennifer Kosiak, Mathematics

Abstract. This research presentation will focus on student difficulties and misconceptions that hinder learning in algebra. Through item analysis methods, this presentation will highlight the common errors and procedural mistakes in algebra. Interview data will also be presented that outline mathematics faculty and undergraduate students' perceptions of the fundamental skills needed for successfully completing a college algebra course.

UR.22 An Examination of the Change in Anglo-Saxon Barrow Burial Use

Erin DuBois
Advisor: Jonathan Baker, Sociology and Archaeology

Abstract. The Anglo-Saxon period in British history is full of social, religious and political upheaval. Not only is this reflected in the surviving historical record but also in the collection of burial sites throughout the island. Over the course of several hundred years the use of the barrow mounds for burials that cover the landscape of Britain, remains of the long ago cultures that once dominated the landscape, seems to change. Has there a change and if so what caused this change in the burial tradition? This study will examination of data collected from Early Anglo-Saxon cemeteries (5th-early 8th century), 'Final Phase' burials (7th-early 8th century), Late Anglo-Saxon cemeteries (9th-11th century), and Viking burials in order to better understand the burial traditions that span this period in time. The data that is to be examined will be the body positions, type of burials, the use of grave goods, treatment of outcasts, along with age and sex ranges within each of the above burial types. The use of historical documents will also be used in order to understand the point of view the individuals reacting to the changes that this period experienced. The results produced by this study will show how the individuals during the Anglo-Saxon period reacted to large number of social changes that occurred because of the Viking invasions during this period of British history. This information may add to our understanding in how societies react to social pressure and stresses, both inside and outside their social control.

UR.23 The Nature of Society: A cultural survey of Devil's Lake settlement 1870 - 1900

Megan Clark
Advisor: John Grider, History

Abstract. Today, one hundred years after it first opened, Devil's Lake State park attracts more people than another other state park in Wisconsin and averages between 1.2 and 1.4 million visitors annually. Few people realize that the transformation from the original settlement to the current park set up. Through archival investigation and historical interpretation I uncovered a forgotten past of Devil's Lake that few people realize was the origins of the park itself. It is a past the deserves to be preserved and examined by future generations.

UR.24 Investigating Achievement Gaps in Mathematics

Mary Heisel
Advisor: Jennifer Kosiak, Mathematics

Abstract. This research project will inform constituents in the education community about in-service and pre-service teacher perceptions of the causes of achievement gaps in PK-12 mathematics classrooms. The purpose of the research project is to gain a greater understanding of the perceived causes of mathematical achievement gaps, as well as to explore the relationship between instructional strategies and those achievement gaps. The data obtained from this study will guide the Mathematics Department and the larger educational community in the design of appropriate instruction strategies to remediate these gaps. Therefore, one major benefit is improved student learning outcomes at all levels. Specifically, this project will address the following research questions: 1. What are in-service and pre-service teachers' perceptions of and the causes for the achievement gaps in mathematics? 2. What instructional strategies do in-service and pre-service teachers use to lessen the achievement gap in their current or future mathematics classroom? 3. What instructional strategies do PK-12 students believe enhance their understanding of mathematics? /

UR.25 NUBIAN A-GROUP AND EGYPTIAN TRADE RELATIONS IN THE PREDYNASTIC
Mitchell Running
Advisor: David Anderson, Sociology and Archaeology

Abstract. The archaeological study of interregional trade provides the unique opportunity to reconstruct not only the foreign relations of cultures that are no longer in existence, but also how these relations evolved over extended periods of time. This study examines interactions between the Egyptian Naqada and Nubian A-Group cultures - located near the present day border of Egypt and The Sudan - between 3800 and 2900 B.C.E. Cemeteries from each group were compared looking at frequency of grave goods, burial architecture, the treatment of the deceased, and how these factors changed over time, in order to determine: (a) the degree of social complexity in Nubian A-Group society, and (b) the ability of trade to influence culture.

UR.26 Mr. Bojangles: The Tap Man
Sean Mobley
Advisor: Patricia Turner (Communication Studies) and Dr. John Grider (History)

Abstract. Bill Robinson (stage name Bojangles) revolutionized the entertainment industry. Before he rose to stardom in the 1920s and 30s, the trade was dominated by white entertainers and grotesque stereotypes of blacks. Blackface was common. Even black performers, on the rare occasions they were allowed on the white stages, were forced to "black-up" and don the mocking, burnt-cork visage. Bojangles changed everything. After gaining prominence as a national performer, he broke the color barrier of mainstream theater and performed for audiences of all colors around the country. On top of that, he crafted his act to purposefully counteract the powerful racial forces working against African Americans. This documentary will weave together the history of tap dancing, the impact of blackface and minstrel shows starting in the 1800s, and the narrative of Robinson's life to fully explore the incredible contributions Robinson made setting the stage for the dramatic advances in civil rights during the 1900s.

UNDERGRADUATE EXHIBIT PRESENTATION ABSTRACTS

Valhalla Hall:
9:00 am-10:45am

E.1 Performance without Human Actors
Andrew Appold and Brent Bankes
Advisor: Amanda Hart, Theatre Arts

Abstract. This grant will fund research on the topic of LED lighting technology, atmospherics, and projection design for theatre, culminating in the design of a multimedia performance, including several explored methods of special effects. Funds will be used to purchase several LED lighting and atmospheric instruments for use in the performance. Combining these instruments, individual research, and experience with lighting and projection design, the performance will be presented to the theatre department and at the Celebration of Undergraduate Research in the Spring of 2012.

E.2 Gauguin and the Philosophy of Primitivism
Jessalyn Kimball
Advisors: Joel Elgin (Art) and Sam Cocks (Philosophy)

Abstract. It is my intention to direct my academic interests in Art and Philosophy to a research project based in the jungles of Costa Rica. My research will focus specifically on my interest in Primitivism and Asian philosophy. The result will be a unique Artist's Book that documents my journey and expresses with both images and words, my findings.

E.3 Discovering The History And Modern Practice Of Letterpress Printing
Kirk Benson
Advisor: Joel Elgin, Art

Abstract. I am hardwired for process. Printmaking provides for me as an artist, a creative avenue to work in a very procedural and technical way. Outside of the university setting I have focused a great deal of my time to letterpress printing at the Hamilton Wood Type Museum in Two Rivers Wisconsin by attending conferences, assisting professional printers, and donating my time as an intern. I am fascinated with the history and artistic nature of the letterpress process and would like to continue to learn about the process and practice of the medium more purely as an artistic form. I have focused a great deal of my time to letterpress printing at the Hamilton Wood Type Museum in Two Rivers Wisconsin by attending conferences, assisting professional printers, and donating my time as an intern. I am fascinated with the history and artistic nature of the letterpress process and have continued to study and learn about the process and practice of the medium more purely as an artistic form by tracing letterpress history back to its 19th century roots in America. /

UNDERGRADUATE EXHIBIT PRESENTATION ABSTRACTS

E.4 Manifestations of the Stage: A Study of Classical and Contemporary Physical Acting Methods
Location: Port O'Call, 11:10 am-12:50pm
Brian Coffin
Advisor: Beth Cherne, Theatre Studies

Abstract. This project will be an analysis of past influential physical acting methods, and a comparison with the Margolis Method, a contemporary physical acting method, culminating in a study of how to manifest ideas, emotion, and character through the use of body language and physical acting. I will apply these concepts of physical acting to characters in theatre in order to test the artistic impact on the audience of these different methods. I will present my results and learnings from the Margolis Method training in the form of a public workshop, where people will work on the floor with concepts learned from the Margolis Method. People who attend will learn the basic foundations of the Method, and get an idea of what a day in the studio might have looked like.

E.5 THE BILL EVANS TRIO: A STYLISTIC ANALYSIS AND APPLICATION
Location: Main stage, Vahalla, 1:00pm-1:30pm
Dan Collins, Bryan Zannotti, Andrew Steeno
Advisor: Karyn Quinn, Music

Abstract. Bill Evans said it himself; "It ends up where a jazz player, ultimately, if he's going to be a serious jazz player, teaches himself." The Bill Evans Trio is debatably the best piano-featured jazz trio in history. Their sound is influential in that the interactions they created were something truly unprecedented. The musical relationship between each player was close, and the way they played could many times be seen as "collective improvisation." The purpose of this research project was to understand and assimilate the creative interaction of the Bill Evans Trio, leading to the ability to play within their stylistic parameters. With the funds we received, we created a set of recordings that include interpretations of both jazz standards and original compositions that evoke the style of the Bill Evans Trio. Our goal in researching this trio was to hone our roles as rhythm section players by emulating some of the principal interactions that took place within this notable group. We learned these style characteristics by analyzing transcriptions, examining different recordings of the same composition, interacting together in rehearsals and performances, and using original compositions as a vehicle for our discoveries. As a final project, we documented our research with a recording of nine pieces, including both standards and originals. This recording was completed with Grammy Award winning engineer, Brett Huus, owner of Sound Strations Audio Inc.

E.6 Video Projections in Modern Theatre

Brent Bankes
Advisor: Amanda Hart

In June 2011 I attended the Prague Quadrennial where I participated in two workshops focusing on the use of video projections in theatre and applications needed to operate those projections. These workshops were led by some of the most experienced professionals in the field including world renowned interactive sound and lighting designer, Dave Mickey. I gained a fuller understanding of the possibilities and uses of projections on the stage. I also studied Laterna Magika, a Prague theatre famous for its use of film projections and visual effects combined with ballet to create stunning dance performances. I continued my studies with a THA 481 class focusing on projections in scenic design which culminated in a realized projection design in *From Up Here* in the UWL Frederick Theatre. Through this research I have introduced new software to the theatre as well as the ability to use current software more efficiently. This experience has aided my understanding of theatrical projection design and implementation and fostered within me a passion for this new and burgeoning art form.

E.7 Puppetry and Prague: Creativity and Research from Around the World

Brandon Bankes
Advisor: Amanda Hart

In June 2011, I attended the Prague Quadrennial in Prague, Czech Republic. While there I participated in a workshop led by one of the most experienced professionals in the field of puppetry, Svend Kristensen, of Norway. The workshop, "Intersection of puppet as object, stylized movement, space/time and opera/music," helped me to expand my knowledge of the design, fabrication, and operation of theatrical puppets. I also attended a performance of Mozart's opera, "Don Giovanni," at the National Marionette Theatre and visited numerous unique puppet shops in the centuries old city. Upon my return to UW-L I utilized my new skills in the design and creation of a working, hyper-naturalistic, life-size puppet fit for use in a theatrical production.

GRADUATE STUDENT ABSTRACTS

GRADUATE POSTER PRESENTATION ABSTRACTS

Poster Session A
Valhalla Hall: 9:00am-10:45am

G.1 The Effects of Nutrient Restriction on the Interaction between Aquatic Snail *Biomphalaria glabrata* and Its Trematode Parasite *Schistosoma mansoni*
Katie Josephson
Advisor: Greg Sandland, Biology

The dynamics of many host-parasite interactions have been studied extensively. Significantly less attention has been paid to the effects of environmental conditions on these interactions. This study will examine the effects of nutrient deprivation on strains of aquatic snail *Biomphalaria glabrata* and how this impacts the production of cercariae from its trematode parasite, *Schistosoma mansoni.* This will determine if parasites infecting hosts with restricted access to nutrients will generate fewer cercariae that are smaller in size and/or have shorter life spans than those from fed snails. This research will also determine if these effects will differ based on host genotype, as the snail strains used in this study have been shown to express different levels of susceptibility to *S. mansoni* infection.

G.2 The Effects of Progesterone on Spinal Cord Injury: Determination of Progesterone and 5α-dihydroprogesterone's Role in Providing Neuroprotection through mRNA Up-Regulation of BDNF and TRKB *In Vivo*
Tim Demmer
Advisor: Bradley Seebach, Biology

Progesterone is currently being studied as a treatment for traumatic brain and neuronal injuries and is currently in phase III clinical trials in Wisconsin and throughout the U.S. While progesterone has been shown to increase survival and neurological recovery in trauma victims, its actions are diverse and not fully understood. Neuronal survival following injury is dependant on the presence signaling proteins called neurotrophins. Certain neurotrophins have been shown to be up-regulated following treatment with progesterone. While progesterone can activate certain specific nuclear and membrane receptors to promote genetic transcription, its metabolites can bind to several of the same receptors as well as activate others. The mRNA up-regulation of brain derived neurotrophic factor (BDNF) and its TrkB receptor by progesterone and its metabolites were studied in response to injury in the adult rat spinal cord. Rats were pretreated with the inhibitors of progesterone metabolism, (finasteride, indometacin) and their spinal cords were subject to transection at T12 vertebrae. Animals were then treated with either progesterone or its metabolite 5α-dihydroprogesterone (DHP). Changes in mRNA expression were examined distal to the transection using q-PCR. Further understanding of progesterone's action in response to neuronal injury is important due to its limited knowledge and substantial efficacy.

G.3 The Role of Practice Length in the Maintenance of Power Production in Collegiate Gymnastics

Kasey Crawford
Advisors: Glenn Wright, Russell Hendrix and Richard Mikat, Exercise and Sport Science

The purpose of this study was to observe the effect the length of practice had on strength and power to determine the efficacy of strength training following a team practice. Twelve Division III collegiate women gymnasts volunteered for this investigation. Subjects were tested pre (following standard warm-up) and post-practice sessions on two different occasions. Length of practice was manipulated to produce different states of fatigue and tested in a counterbalanced order. Each practice included routines on uneven bars and one (half) or two (full) additional events. Each testing session, gymnasts performed three different strength/power tests to determine neuromuscular fatigue: a four consecutive jump test (4JT), a loaded squat jump (SJ), and a loaded shoulder throw (TH). Variables tested include peak power (PP), peak force (PF), and peak velocity (PV) for the SJ and TH. Ground contact time (GCT), jump height (JH), and reactive strength index (RSI; JH/GCT) were determined for the 4JT. In the SJ, PP increased ($p=0.02$) following the half practice and insignificantly decreased ($p=.10$) following the full practice. This led to a significant difference in PP ($p=.01$) between the half and full workout in the SJ. PF decreased ($p=0.03$) in the TH following the half practice but insignificantly decreased following the full practice ($p=0.37$). In the 4JT, a trend towards a decrease ($p=0.09$) in GCT was observed following the half practice, and an insignificant increase ($p=0.17$) was observed following the full practice. The changes in GCT led to a significant difference ($p=0.04$) between the half and full practice. No other significant differences following practice or the changes between the different practice lengths were observed. Our results indicate that significant changes in lower body strength/power following the half practice may actually benefit strength training following practice or have no significant effect. There were no signs of neuromuscular fatigue in the lower body following the full practice. The significant decrease in PF in the TH following the half practice is hard to explain, as both practices had the same volume of upper body involvement. Overall, strength training following similar amounts of practice may not hamper trained gymnasts.

G.4 The Validity and Reliability of the Lane Agility Test for Collegiate Basketball Players

Ashley Brown and Kristin Mally
Advisors: Mark Gibson and Glenn Wright, Exercise and Sport Science

Agility has been traditionally referred to as the ability to change body direction or position in space. Sports, such as basketball, require intermittent starts, stops, changes of direction, etc. Several tests have been developed to measure agility; this study focused on the lane agility test (LAT) employed by the NBA. Little research has utilized the LAT; the goal of this study was to determine the validity and reliability of this test. The T test (TT) and Pro Agility Test (PAT) have been used consistently in literature. These tests served as a comparison for the LAT in this study. Twenty-four Division III collegiate basketball players ($m=12$, $f=12$) performed three agility tests on two different occasions. The best time of six trials of LAT and three trials of PAT and TT were compared. The players' coaches were asked to rank (RANK) each player based on his/her agility in a game situation. These results were then compared with the rankings of the three agility tests. Reliability of the LAT was assessed using Cronbach's Alpha. To compare performance on LAT, TT, PAT, and RANK, Spearman-Roh correlation was used. Intrasession reliability was very strong for all subjects ($p=0.988$) for Day 1 trials of LAT ($p=0.988$), and Day 2 was very strong for all subjects ($p=0.990$). Intersession reliability was also very strong for all subjects ($p=0.978$). A very strong correlation was found between performance on LAT and TT (males: $p=0.923$, females: $p=0.888$), and PAT (males: $p=0.853$, females 0.741). Moderate correlation was found between performance on LAT and RANK for males ($p=0.510$); minimal correlation was found between LAT and RANK for females ($p=0.392$). Results support the LAT as a valid and reliable measurement of agility. Coaches are encouraged to test their athletes, as their subjective ranking is not a good indicator of agility.

G.5 LifeMoves™ Effect on Blood Pressure, Heart Rate, Respiratory Rate, and Perceived Stress.

Megan Knutson and Kristi Cadwell
Advisors: Kris Greany (Physical Therapy), John Porcari (Exercise and Sport Science), and John Greany (Physical Therapy)

Chronic stress is a prevalent problem that contributes to a myriad of health conditions. Stress management techniques such as yoga and meditation are advocated to reduce the psychological and physiological effects of stress. LifeMoves™, a novel stress management approach, is a DVD-based program that guides the participant through upper body movements choreographed to meditative music. The objective of this study was to quantify the acute effects of LifeMoves™ participation on blood pressure, heart rate, respiratory rate, and perceived stress. Twenty-seven male and female volunteers (mean age 68.1 ± 12.5 years) completed the study. Participation included three, twenty-minute practice sessions of LifeMoves™ and chair yoga and three testing sessions (one each for LifeMoves™, chair yoga, and sitting quietly as control). During the testing sessions, subjects performed ten minutes of LifeMoves™, chair yoga, or sitting quietly in a room with minimal distractions. Blood pressure, heart rate, and respiratory rate were measured and perceived stress assessed on a visual analog scale prior to and following each testing session. Paired t-tests were conducted to assess the effects of each condition on blood pressure, heart rate, respiratory rate, and perceived stress and repeated measures ANOVA to evaluate differences between conditions. Systolic blood pressure, respiratory rate, and perceived stress decreased following LifeMoves™, chair yoga, and sitting quietly. Heart rate and diastolic blood pressure did not decrease with any treatment. There were no differences in the pre-post changes of any variable between the treatments. Ten minutes of LifeMoves™, chair yoga, or sitting quietly all decreased blood pressure, respiratory rate, and perceived stress. This study demonstrates that a brief practice of LifeMoves™, chair yoga, or sitting quietly can lower physiological and psychological measures of stress.

G.6 Validation of OpenSim to Estimate Muscle Force during Drop Landings and Squats

Bethany Wanderski, TJ Nereng, Nate Heggeseth, and Mike Wenzel
Advisor: Di-An Hong, Health Professions

Anterior cruciate ligament (ACL) injuries often occur from a deceleration event such as landing. Knee muscle force estimation is an important research area in ACL injury and rehabilitation. However, the individual knee muscle forces during landing have not been sufficiently investigated using a dynamic simulation approach. The purpose of this study was to determine the validity of knee muscle forces estimated by OpenSim, a dynamic simulation software, during drop landings and squats. Four subjects (three males, one female) performed drop landings at two different heights (40 cm, 60 cm) and squats. Data was collected using a 3D motion analysis system, two force platforms and a 5-channel electromyography (EMG) system. Dynamic simulation was conducted to estimate muscle forces using OpenSim software with a 12-segment and 92-muscle model. The rectus femoris, semimembranosus, biceps femoris, vastus lateralis and medialis activity (EMG) during each trial was recorded and processed as a percentage of the maximal voluntary isometric contraction. Preliminary results in this study indicate that the muscle forces estimated by OpenSim appeared to be most strongly correlated with the actual recorded EMG for the squat activity. Muscle forces associated with drop landings appeared to be less correlated. The muscle forces calculated by OpenSim for slow motions, such as walking and squats, appeared to have a stronger correlation with EMG activity than did the drop landings, which is a fast movement. Additional research needs to be conducted to determine how to change model parameters and settings as input for OpenSim simulation in order to improve knee muscle force estimation for drop landings.

G.7 Task Analysis-Based Program in a Patient with Chronic Cerebellar Stroke

Andrea Gleason, Ashley Ash, Kristin Hurley, and Lindsay Beduhn
Advisor: Stacey Meardon, Physical Therapy

Individuals with cerebellar stroke often have significant difficulty with recovery of motor coordination. The application of a task-based approach may support the repetition and focus needed to improve functional mobility. Task analysis models are often used to diagnose specific difficulties of movement control. However, application of these models to the development of a task-specific circuit has not been demonstrated. A 29-year-old woman, two years after cerebellar stroke, presented with bilateral motor incoordination and a goal of regaining independent mobility. Measurements were taken at baseline and after 25 and 40 sessions. The following outcome measures were used: Five Times Sit-to-Stand (FTSTS) (MDC=2.7s; ICC=0.989-0.976): standard, mobile chair; three variations of Timed Up and Go (TUG) (MDC=2.9s; ICC=0.96): standard, dual task (cognitive, manual); 6-Minute Walk Test (6MWT) (MDC=54.1m; ICC=0.99); Dynamic Gait Index (DGI) (MDC=4; ICC=0.96); Activities-specific Balance Confidence (ABC) (MDC=13; ICC=0.85); and functional torque ratios at the knee. At baseline, task analyses of critical elements for STS and locomotion were used to identify key movement deficits. Based on these deficits, a task-specific circuit of STS, walking, strength and balance exercises was developed. After 25 sessions, FTSTS improved during stable and mobile conditions ($\geq$ 15s). All TUG variations demonstrated meaningful change ($\geq$ 3s). No meaningful change was observed for 6MWT or DGI. The ABC score improved 11%. Functional torque ratios remained unchanged from baseline to retest. This task-specific circuit has been successful thus far in improving movement deficits from a cerebellar stroke. Meaningful improvements were observed in functional measures of safety and independence, with less significant change in perceived confidence. Little impact was observed in gait measures and functional torque ratios. Current results suggest repetition of specific tasks and task elements may translate into improved function and independence.

G.8 Patellofemoral Joint Stress with Three Squat Techniques in Females with Patellofemoral Contact Area from Healthy and Individuals with Patellofemoral Pain

Nathan Olson
Advisor: Thomas Kernozek, Physical Therapy

Patellofemoral pain is a common pathology in an active population, particularly in females. One factor thought to contribute to the development of pain is joint stress. This study used three dimensional motion analysis and force plates to gather data on patellofemoral joint forces and stress during squatting using three different squat techniques. Seventeen healthy female subjects were tested. The three squatting techniques analyzed were squatting with knees parallel to toes, squatting with knees 3% of total leg length past the toes, and squatting with knees 6% of total leg length past the toes. Data gathered on force at the patellofemoral joint was calculated from laboratory data regarding movement performance and a computer model. Patellofemoral joint force and stress was estimated using patellofemoral joint contact area measurements for female subjects with and without patellofemoral pain. No significant differences were found in patellofemoral joint stress or patellofemoral joint reaction force using contact area from healthy subjects and those with pain between the three techniques. There was a significant interaction between squat technique and patellofemoral joint contact area from healthy and patellofemoral pain estimates. Using healthy patellofemoral contact area data, the 6% squat technique yielded the greatest contact area compared to other techniques. While using patellofemoral pain contact area data, subjects had the least contact area while performing the form squat technique.

G.9 The Acute Effects of Exercise and Exercise with Cocoa Flavanols on Post Exercise Hypotension: A Pilot Study

Heather Fortuine
Advisors: John Greany and Kris Greany, Physical Therapy

Dynamic exercise results in decreased blood pressure (BP). Consumption of flavanols, a substance found in cocoa, has been shown to decrease resting BP. This study sought to determine whether flavanol consumption, when paired with exercise, would augment post-exercise hypotension (PEH). Eighteen subjects (six pre-hypertensive/ hypertensive (pre/HTN), twelve normotensive (NTN)) were recruited. Each subject participated in three sessions approximately one week apart. Session one consisted of gathering baseline data and performing a treadmill max test. Sessions two and three consisted of thirty minutes of exercise at 65%-75% of maximal heart rate reserve followed by sixty minutes of rest with BP monitoring. Subjects were randomly assigned to ingest 750 mg of cocoa flavanols prior to one of the exercise sessions. A repeated measures ANOVA and paired t-tests were conducted to evaluate PEH with and without the addition of flavanol supplements. The mean systolic blood pressures (SBP) were baseline 116.0 ± 10.4 mmHg; post exercise 110.5 ± 9.8 mmHg; post exercise/flavanol 110.9 ± 7.5 mmHg. There were significant reductions in one hour SBP after exercise and after exercise/flavanol supplementation (-6.6 ± 1.5 mmHg; -6.5 ± 1.5 mmHg; $P<0.01$); the addition of flavanols to an acute bout of exercise resulted in no additional reductions in SBP. There were no changes in DBP after either treatment. Subjects with pre/HTN demonstrated a greater PEH systolic response than NTN subjects (-10.3 ± 5.2 mmHg versus -2.7 ± 6.0 mmHg; $P<0.001$). This study confirms that thirty minutes of moderate intensity exercise results in a decrease in SBP following exercise. Individuals with pre/HTN experienced a greater PEH response than NTN subjects. There were no significant changes in DBP for either condition. There was no difference in SBP reductions between the exercise and exercise/flavanol supplementation groups.

G.10 Walk Strong – Walk Tall: A Multifactorial Fall Prevention Program Pilot Study

Petre Grande and Emily Schack
Advisor: John Greany, Physical Therapy

Falling is a common problem among elderly people with many negative consequences. Falls are the most common cause of nonfatal injuries for people older than 65 years in the United States and contribute to increased morbidity and mortality in the elderly. The purpose of this study was to conduct a feasibility study of a new fall prevention program developed by the UW-L Physical Therapy Program. An assisted living facility participated in a four-week fall prevention program (Walk Strong – Walk Tall). Twenty-one subjects volunteered for the program (mean age 79.6 + 11.2 years; 16 females/5 males). The program is unique in that the participants select the topics they desire to learn more about from a menu of known risk factors for falling. The program was presented by Doctor of Physical Therapy students two times each week (10-11 participants per session) for ninety minutes. The topics covered were balance exercises, postural hypotension, vision, cognition, vitamin D and footwear. In addition, functional assessments were also conducted (Timed Up and Go test and walk speed). Of the participants, 57% had experienced a fall in the previous year; 33% of those falls required medical attention. Currently, 71% were using an assistive device for ambulation. The mean initial Timed Up and Go (TUG) time was 19.6 + 6.5 seconds, substantially longer than the 13.5 seconds identified as the threshold for older adults being at risk. Initial comfortable gait speed was 1.6 m/sec + 0.4 m/seconds. TUG time and gait speed significantly improved at the conclusion of the program. Qualitative comments at the conclusion of the program demonstrated 50% of participants were more confident that they would not fall. The fall prevention program (Walk Strong-Walk Tall) appears to be an effective program for decreasing fall risk in older adults.

G.11 Development of a Wrestling Sport Specific Conditioning Test

Mark Issacson
Advisor: Glenn Wright, Human Performance

The purpose of this study was to determine the reliability of a sport specific conditioning test that incorporates the physiological demands of wrestling. Sixteen Division III collegiate wrestlers performed two pre-season tests two days apart in counter-balanced order to assess their physical conditioning. One test performed was an upper body ergometer (UBE) repeated sprint protocol that included eight stages of fifteen seconds maximal effort arm cranking at a resistance of 0.07kg/kg of their certified weight class followed by thirty seconds of passive recovery. Pedal RPMs were used to calculate the mean power output (MPO) for each fifteen second sprint. The developed test, termed the wrestling sport specific conditioning test (WSSCT), utilized a bag filled with sand to 0.5kg/kg of the wrestler's weight class that was repeatedly thrown against a wall over a course of seven one minute rounds. Each round, wrestlers completed seven throws as quickly as possible. Upon completion of the seventh throw, the wrestler recovered until the subsequent round. Average time per throw (s/throw) was determined each round as the time (s) to complete the sandbag throws divided by the number of throws in that round. Both the UBE test and WSSCT were compared using performance decrement (%), three minute post-lactate, and peak heart rate (HRpeak) values. No significant differences were found between the UBE test and WSSCT for performance decrement (p=.600), blood lactate (p=.283), or HRpeak (p=.214). Grouping the wrestlers into a light weight class (LWC) and heavy weight class (HWC) resulted in a significant interaction for performance decrement between the groups for the WSSCT and UBE (p=.001), but no interactions were observed for blood lactate (p=.198) or HRpeak (.990). Reliability for the WSSCT was established using intraclass correlation coefficient (ICC, r=.96). A clear difference in performance decrement was observed between the LWC and HWC groups in the WSSCT, indicating this test may be more sensitive than the UBE test. The HWC group fatigued more rapidly than the LWC in the WSSCT. This WSSCT assessed the conditioning necessary for success in wrestling. Coaches can assess their wrestlers with this reliable, inexpensive, and time efficient test. Future research should include tracking WSSCT performance throughout the season.

G.12 Cloning and Mutational Analysis of the Uropathogenic *Escherichia coli* fimB Promoters *In Vitro*

Brandon Reuter
Advisor: William Schwan, Microbiology

Uropathogenic *Escherichia coli* (UPEC) cause around seven million urinary tract infections annually. Type I pili are largely responsible for mediating UPEC attachment to host bladder cells through a ligand/receptor interaction with mannose residues. Several fim genes are involved in type I pilus expression, including fimB. The fimB gene codes for a site-specific recombinase that controls the inversion of a 314 bp DNA segment containing the promoter for the pilus structural gene fimA. Three promoters have been mapped for fimB, but little is known about their respective functions in UPEC. In order to better understand the function of these promoters, nine promoter mutations were made using the plasmid pWRS4-1, which contains fimB and its native promoters. *Escherichia coli* UTI189 ΔfimB cells were transformed with mutant plasmids and grown in Luria-Bertani broth with varied pH conditions with or without 400 mM NaCl. After static growth in the different Luria-Bertani broth conditions, hemagglutination assays were performed to assess the effect the fimB promoter mutations had on the expression of type I pili. Recombinant cells were compared to cells containing the plasmid pWRS4-1. Preliminary results indicated that mutations made in the fimB promoter two region and TATA box of promoter one had the most profound effect on type I pilus expression when cells were grown in the absence of the high salt concentration.

G.13 The Benefits of Martial Arts in Children with Autism Spectrum Disorder

Tara Schmitz, Rachel Nelson, and Andrew Oebser
Advisor: John Greany, Physical Therapy

The goal of this study was to compare the effects of martial arts on physiological and social domains in children with Autism Spectrum Disorder (ASD) and neurotypical (NT) children. Children with ASD and NT children were enrolled in cohorts that attended 45-minute martial arts sessions at least 2x/week for ten weeks. Children were assessed pre/post for single leg stance time, temporal/spatial gait parameters and postural sway. In addition, a control group (no martial arts) of children with ASD participated in the testing. Parents of children with ASD completed the following behavioral surveys prior to and at the conclusion of the intervention: Autism Treatment Evaluation Checklist (ATEC), Social Skills Improvement System (SSIS), and Clinical Global Impression (CGI). Data were analyzed using paired t-tests and one-way ANOVA. The first cohort included four children with ASD, three NT attending martial arts, and two ASD children as controls (no martial arts). Single leg stance time improved 87% in children with ASD and 39% in NT children attending martial arts; difference in improvement was not significant. There was a trend toward improvement in gait parameters in the ASD group but changes did not reach statistical significance. The SSIS showed significant mean change score for Communication for ASD children in martial arts (2.5 ± 1.9) compared to control (-1.5 ± 0.7). No statistical significant difference was found between groups (ASD-martial arts versus ASD control) for the ATEC; however, the sociability subtest demonstrated a trend toward improvement ($p = .057$). Among parents of those participating in martial arts, 75% reported moderate global improvement on the CGI scale. Martial arts training resulted in a trend toward improved balance, gait and social/communication measures in children with ASD; however, conclusions are limited by the small sample size.

G.14 Effects of Step Length on Patellofemoral Joint Stress in Female Runners with Patellofemoral Pain

Kathryn McElroy, Eric Ellis, Amanda John, and Ryan Sharpee
Advisors: John Willson, Thomas Kernozek, and Di-An Hong, Physical Therapy

Running, a popular fitness activity, is often accompanied by overuse injuries. Patellofemoral pain, a common overuse injury among female runners, is generally attributed to increased patellofemoral joint stress (PFJS). The purpose of our study was to examine the effects of changing step length on PFJS in female runners with patellofemoral pain. Eight college-aged females with running experience and patellofemoral pain participated in this ongoing study. Subjects performed five running trials under three conditions: normal step length, long step length (10% longer), and short step length (10% shorter). Running speed was consistent at $3.7 \text{ m/s} \pm 5\%$ during all conditions. Data were collected using a force plate and reflective markers with an eight camera, three-dimensional motion capture system. Knee flexion angle, knee extension moment, and patellofemoral contact area as a function of knee flexion angle were used to calculate PFJS during running. Our preliminary results suggest that increasing step length increases peak PFJS by 11%, increases PFJS integral each step by 27%, and exposes the patellofemoral joint to 10.5% greater stress each mile (7305.4 lbs/ in^2 greater stress each mile) compared with the runner's preferred step length. Decreasing step length decreases peak PFJS and PFJS integral each step by 11% and 18%, respectively. After accounting for the increased number of steps/mile, decreasing step length still decreases PFJS each mile by 3.8% (2625.9 lbs/in^2 less stress each mile). These preliminary results indicate that PFJS may be decreased by decreasing step length. Reducing PFJS during running may lessen the exacerbation of patellofemoral pain reported in this population during the course of a run and promote continued participation in this popular fitness activity.

G.15 Reliability of the Accusway and GAITRite Systems in Children with Autism Spectrum Disorder and Neurotypical Children

Katelin Weis and Molly Grames
Advisors: John Greany and Kris Greany, Physical Therapy

Postural control is a motor skill that is often impaired in children with autism spectrum disorders (ASD). When compared to children with neurotypical development (NTD), children with ASD display less postural stability and larger sway areas. Impaired gait patterns, characterized by increased variability in basic gait parameters, are also often noted in children with ASD. The purpose of this study was to evaluate the test-retest reliability of two clinical instruments used to measure the biomechanical aspects of gait and posture in children with and without ASD. Children with ASD (n=6) and NTD (n=3), ages 6-15, were recruited to study the effects of ten weeks of martial arts on gait and postural sway. Postural sway was measured using the AMTI Accusway (AMTI, Watertown, MA) force platform. Subjects completed three trials for each of the two conditions: eyes open and eyes closed. Gait was assessed using the GAITRite Walkway System (CIR Systems, Havertown, PA). Subjects were instructed to walk at their normal pace down the 25-foot walkway for eight trials. Intraclass correlations (ICC3,1) and coefficient of variation (CV) values were calculated using SPSS v19.0. The reliability for postural sway variables (path length, average velocity and standard deviation X and Y direction) was good to excellent (ASD ICCs 0.82 - 0.95; NTD ICCs 0.78 - 0.92). For both groups of children, the reliability of gait variables (velocity, cadence and step length) was good to excellent (ICCs between 0.72 – 0.91 for ASD children; 0.95 – 0.98 for NTD children) and both groups had low CV scores (4.7 – 7.9% for ASD children; 3.4 – 4.2% for NTD children). This study demonstrated good to excellent within-day reliability of the GAITRite Walkway System and postural sway in children with and without ASD.

G.16 Tibial Bone Stresses in Runners with a Stress Fracture

Rachel DeGrood, Emily Hill, Pawel Moldysz, and Jedd Wellenkotter
Advisor: Stacey Meardon, Physical Therapy

Though running is a convenient form of exercise, it is associated with increased risk of musculoskeletal injury. The lower extremity is the most frequently injured region among runners, and stress fractures, commonly seen within the tibia, are among the top five most reported injuries. Stress fractures likely result from elevated bone stress, which can be calculated from internal bone forces and moments and bone geometric properties. Currently, studies have examined applied loads and geometric properties of bone separately; however, the combined effect of bone forces and bone geometry has not been examined. Twenty runners (ten cases and ten controls) participated in this ongoing study. Motion capture and ground reaction force data were collected as subjects ran over a force platform. Ten successful running trials were analyzed. All participants ran at a set pace (3.7m/s±5%) in standard laboratory footwear. Using a custom MatLab program, a combination of inverse dynamics and musculoskeletal modeling was used to estimate internal forces and moments acting on the tibia during the stance phase of running. Bone geometry of the tibia was obtained via radiographic imaging. Modeling the tibia as a hollow beam, subject-specific bone stresses at the distal tibia were calculated using individual bone geometry and internal bone forces and moments. Group differences in bone stresses were assessed using multivariate analysis of variance. It is expected that runners with a history of stress fracture will demonstrate greater tibial stresses and stress rates. These stresses will likely be due to a combination of elevated bone forces and moments and smaller bone size. The results of this study will be used to identify key gait parameters and mechanics associated with elevated bone stress. Additionally, this information will be used to guide future prevention and rehabilitation efforts in runners with tibial stress fracture.

G.17 Moving Districts Forward: Examining Differences in Teachers' Beliefs about Behavior

Paul Fitts
Advisor: Robert Dixon, School Psychology

As schools move forward to implement Response to Intervention (RtI), some districts are focusing on academics while others are focusing on behavioral concerns. System change is a complex process that begins with teachers' beliefs and practices. This study will examine the impact of perceived RtI supports in a school with teacher experience to determine differences in classroom beliefs about behavior management practices. Implications for educators and school psychologists impacting system change will be discussed.

G.18 English Language Learners: Exploring Connections to the School
Emily Gorski
Advisor: Jocelyn Newton, School Psychology

School connectedness leads to positive outcomes for students in terms of academics, behaviors, and general well-being. Little research has focused specifically on the school connectedness of English Language Learners despite the increasing ELL student population. This study will investigate potential differences in school connectedness as a function of English language proficiency and/or grade level. Results will be discussed in terms of impact to the educational environment and the role of the school psychologist.

G.19 Student Retention: Examining the Attitudes and Knowledge of Elementary Teachers
Jaden Ganser
Advisor: Robert Dixon, School Psychology

Student retention is commonly used regardless of minimal support for effectiveness found in the literature. Despite this fact, many educators consider retention to be an effective practice. Few studies have addressed the gap between knowledge of retention literature, teacher attitudes, and practice of retention. This study will examine teacher attitudes based on grade level taught and knowledge of retention literature. Implications for educators and school psychologists involved in making student decisions will be discussed.

G.20 Teacher Understanding of Mental Health and Implications for School Psychology
Megan Pulvermacher and Ericka Grimm
Advisor: Betty DeBoer, School Psychology

The purpose of this study is to describe teachers' perceived and actual knowledge of common mental health disorders such as Attention Deficit Hyperactivity Disorder (ADHD) and less common disorders such as Reactive Attachment Disorder (RAD). Participants will hear implications for teacher training, implications for consultation by school psychologists, and future directions for research.

G.21 The Relationship between Social Competence and Student Dropout
Andrea Tirabassi
Advisor: Jocelyn Newton, School Psychology

In recent research, social competence has been examined in terms of academic achievement among elementary students (Elias & Haynes, 2008). However, there is a lack of research regarding social competence in secondary students. Specifically, this study will examine how social competence relates to risk for school dropout in middle and high school students. Implications for educators and school psychologists working in middle and high school will be discussed.

G.22 Classroom Management Practices: The Importance of Teacher Efficacy
Angelica Wegman
Advisor: Robert Dixon, School Psychology

Teacher efficacy can lead to better classroom management and positive student behaviors. This study will explore the relationship of teacher efficacy, teaching experience, the number of students in classroom and/or elementary grade level on classroom management practices. Results will be discussed in terms of educational practices and the role of the school psychologist to influence high teacher efficacy beliefs in order to increase positive classroom management practices of elementary teachers.

G.23 Breaking Down Barriers: Predicting Paternal Involvement in School
Kevin Lewandowski
Advisor: Robert Dixon, School Psychology

Parental involvement has been proven to increase children's academic, behavioral, social, and emotional functioning. Most research focuses on maternal involvement with little being done with the influence of fathers. This research will examine the activities of fathers, including connections to the school, class, and home, to predict their school-based involvement. Facilitators and barriers will also be explored. Implications for school psychologists and educators to improve the involvement of fathers will be discussed. Parental involvement has been proven to increase children's academic, behavioral, social, and emotional functioning. As research continues to display the benefits of involved parents, programs have been enacted at the local, state, and national levels. Despite the efforts taken to increase parental involvement, mothers are still significantly more involved in school-related activities and frequently the focus of research. This study seeks to address the barriers to paternal school-based involvement and explore the facilitators to increasing the involvement of fathers within their child's schooling. The desired sample size for this study will be 500 fathers from various elementary schools in Port Washington and La Crosse, Wisconsin. Given the limited amount of research on the school-based involvement of fathers, this population will allow further access into potential interventions. With their participation, this study will examine common barriers to paternal involvement and interpret ways to get fathers more involved with their children's schooling.

G.24 Child Development Knowledge and Authoritative Parenting: Implications for Adolescent Mothers
Sarah Payne
Advisor: Jocelyn Newton, School Psychology

One group of at-risk teenagers some school psychologists may work with is teenage mothers. With this population, there are concerns with how much knowledge and information these mothers have to effectively parent their newborn. This poster presentation will summarize results of a study conducted to examine differences between adolescent and adult mothers on knowledge of child development to determine the impact on authoritative parenting. Implications for educators and school psychologists will be discussed.

G.25 "The Little Engine That Could": Examining Persistence in Youth
Cory Cooper
Advisor: Jocelyn Newton, School Psychology

Persistence is a character strength that helps individuals succeed during challenges. This is essential to students in a school-setting, as persistence may fuel academic achievement. Research is lacking in regards to the development of persistence in youth. Therefore, this study examines trends of persistence in high school students and its relationship to academic achievement. Session attendees will learn how persistence develops in youth as a means of pointing to potential interventions to bolster academic success.

G.26 Drafting a Crisis Management Plan for International Travel at an Institution of Higher Education
Andrea Wagner
Advisor: Jorg Vianden, Student Affairs Administration

The purpose of this Applied Research Project was to research and draft a crisis management plan for the International Office (IO) at a large, public research institution in the southern United States. During spring semester 2011, the IO faced three large-scale international crises in rapid succession. At the time, the office did not have specific, written plans or guidelines in place to manage the evacuations of students, faculty, and staff from the crisis situations abroad. Though no one associated with the university was harmed during the crises, the evacuations were troubled by logistical difficulties, interpersonal communication problems, and authority conflicts, resulting in delays to the evacuations. As a result of these experiences, the director of the IO realized the need for a crisis management plan. My methods centered on research of crisis management for business, higher education, and international programs at institutions of higher education. Also interviewed were the university's faculty, staff, and students involved in or affected by past crises to discover their experiences with crisis response. The completed draft of the crisis management plan provides the findings of the research. The findings include the IO's approach to crisis management, the stages of response, precise actions to take for specific international crises (e.g., a medical emergency, an assault, civil unrest, or natural disaster), and post-crisis wrap-up. The crisis management plan will be used by IO staff and campus administrators when responding to future emergencies abroad.

Poster Session B
Valhalla Hall: 11:10am-12:50pm

G.27 Tracking the Spread: A Look at Hypovirus Mediated Recovery in West Salem, WI
Ashley Schultz
Advisor: Anita Baines, Biology

The American Chestnut Tree (*Castanea dentata*) was once a prominent feature on the North American landscape spanning 200 million acres and totaling 4 million trees prior to the outbreak of *Cryphonectria parasitica*. The primary treatment is the use of hypovirus, but to be effective the hypovirus must spread from tree to tree on its own at stands like the one in West Salem, WI. A dsRNA extraction protocol was used to determine if the hypovirus dsRNA was being passed to uninoculated trees in the stand. This research is critical in determining if hypovirus inoculations will provide a long term treatment option or if alternate management strategies need to be pursued.

G.28 Kinetic Comparison of the Power Development between the Hang Clean, Jump Shrug, and High Pull
Timothy Suchomel
Advisor: Glenn Wright, Exercise and Sport Science

To perform a comparative analysis between the hang clean (HC), jump shrug (JS), and high pull (HP) exercises at different relative intensities to determine which exercise, and at what intensity, optimally trains the triple extension movement to produce the greatest power output. Seventeen men with a minimum of two years training experience with the HC but no previous Olympic lifting competition experience performed three maximal effort repetitions each of the HC, JS, and HP exercises at relative intensities of 30, 45, 65, and 80% of their one repetition maximum (1RM) HC on a portable force platform over 3 different testing sessions. Significant main effects for exercise and intensity, and exercise x intensity interactions were identified. The JS produced a greater PPO than both the HC and HP ($p < 0.001$). In addition, the HP produced a greater PPO than the HC ($p < 0.01$). Analysis of intensity showed the PPO occurred at 45% 1RM which was greater than the PPO at 65% ($p = 0.022$) and 80% 1RM ($p = 0.027$), but not significantly different than the PPO at 30% 1RM ($p = 0.438$). The JS produced the greatest PPO at each exercise intensity examined in this study. This was followed in order by the HP and the HC. The greatest differences in PPO existed at the lower intensities (30% and 45% 1RM). However, PPO values became more similar at higher intensities (65% and 80% 1RM). It is likely that the catch phase of the HC does not contribute much to the power production of the lift, and therefore, the training stimulus for improving the power produced in the triple extension is decreased. It may be essential to substitute less technical exercises to train lower limb muscular power in athletes that are not competitive weightlifters.

G.29 The Effect of Step Length on Patellofemoral Stress in Healthy Female Runners
Thomas Almonroeder, Bryan DeJarlais, Andrew Laack, and Isaac Wouters
Advisors: John Willson and Thomas Kernozek, Physical Therapy

The benefits of regular exercise are widely known and lead many people to participate in activities such as running. However, injuries such as patellofemoral pain (PFP) are common among runners, often limiting their training ability. Elevated patellofemoral joint stress (PFJS) is the primary etiological factor for PFP. The purpose of this study is to determine if it is possible to reduce PFJS by changing running step length. We hypothesize that PFJS will be decreased by reducing step length. Ten healthy female college students participated in this ongoing study. Three-dimensional lower extremity mechanics were recorded by an eight camera motion analysis system and a force plate embedded in the floor while running at 3.7 m/s in three conditions: 110% of preferred step length, preferred step length, and 90% of preferred step length. Patellofemoral stress was calculated with a computer model using knee flexion angle, knee extension moment, and estimated contact area between the patella and femur as inputs. Number of steps/mile, cumulative PFJS/step (PFJS integral), and PFJS integral/mile were calculated for each condition. Descriptive statistics are presented here until the sample size is sufficient for hypothesis testing. Increasing step length decreased the number of steps/mile by 13%, but PFJS integral increased 29%, and PFJS integral/mile increased 6% compared with the runner's preferred step length. Decreasing step length increased the number of steps/mile by 20%, but PFJS integral decreased 23%, and PFJS integral/mile decreased 13% compared with the runner's preferred step length. Increasing step length exposes the patellofemoral joint to an extra 9524 lbs of force/in^2 each mile, while decreasing step length shields this joint from 6240 lbs/in^2 each mile. Running with a shorter step length may decrease PFJS and reduce the risk of PFP typically associated with this population.

G.30 Patellofemoral Stresses in Males and Females during Weight-Bearing Squat Techniques
Zachary Koepke, Brian Peterson, and Whitney Gnewikow
Advisor: Thomas Kernozek, Physical Therapy

Patellofemoral (PF) pain is a common injury. Squat exercises focus on improving lower extremity strength. Designing exercises that improve strength while decreasing patellofemoral joint stress (PFJS) is important. PFJS has not been compared with various techniques. Our purpose was to determine PFJS during three different squatting conditions in males and females. These data will be used to determine which squat(s) may benefit patients with known knee pathology. Thirty-three healthy males and females randomly performed three different squat conditions of five repetitions at a rate of three seconds per squat. Each squat depth was 60% of leg length. The form squat consisted of no anterior knee displacement while the other conditions were at 3% (3LL) and 6% leg length (6LL) respectively. Three-dimensional motion analysis was used to determine kinematic data while force plates determined kinetic data at the PF joint. A knee model, based on previous data, was used to estimate joint forces and stress. A repeated measures ANOVA was used to determine differences between gender and squat types. Differences were found between gender in peak knee flexion $F((1,31)=11.289,p=.002)$ and peak contact area $F((1,30)=8.949,p=.006)$. Differences occurred between squat type and peak knee flexion $F((2,62)=100.505,p=.000)$ and peak contact area $F((2,60)=39.31,p=.000)$. No differences between gender or squat type in PF force, PF pressure, or quadriceps force were found. No interactions between gender and squat for knee angle, contact area, PF force, quadriceps force, and PF peak pressure occurred. Males and females had no differences in PF joint pressure, force, and quadriceps force. Increasing anterior knee displacement of squat did not increase peak PF joint pressure, force, or quadriceps force, indicating healthy persons may benefit similarly from form, 3LL, or 6LL squats. Increased contact area in 6LL squats may indicate form squats may be a superior choice for injured subjects.

G.31 Desirable Competencies When Hiring Outdoor Pursuits Trip Leaders on University Campuses
Anna DeMers
Advisor: Steve Simpson, Recreation Management

Many universities offer outdoor pursuits trips (e.g., backpacking, canoeing) for their students. These trips include incoming student orientation programs, physical education and recreation classes, and extracurricular activities. The leaders who are leading these trips play a key component in making the trip a success. Having the right staff to facilitate these trips is very important. There are many components that go into hiring competent people and training quality outdoor leaders. The overriding problem is a lack of knowledge of general standards regarding outdoor leaders in university programs. While there are agencies that accredit outdoor programs (e.g., Wilderness Education Association (WEA), Association for Experiential Education (AEE)), many university programs do not seek accreditation, but instead set their own criteria for leaders. This study examines how university programs, both academic and extracurricular, set standards for trip leaders. It identifies 1) minimum qualifications of leaders, 2) components of their leader training, and 3) competencies desired in the hiring process.

G.32 Teachers' Perceptions of Children with ADHD Label and/or Stimulant Medication
Emily VanEyll
Advisor: Jocelyn Newton, School Psychology

ADHD is highly prevalent in today's schools, and a simple label can influence both teachers' perceptions and reactions. This current study examined how an ADHD label and use/non-use of stimulant medication impacted teachers' perceptions of the severity of a child's behaviors, their emotional and behavioral reactions to the child, as well as their willingness to aid in treatment. Implications for school psychology practice as well as addressing labeling biases in schools are discussed.

GRAD.1 Potential Lethal and Sublethal Effects of Climate Change on Juvenile Freshwater Mussels: Studies on Survival, Growth and Physiology

Alissa Ganser
Advisors: Roger Haro (Biology) and Teresa Newton (Upper Mississippi Environmental Science Center)

Native freshwater mussels are a diverse, but imperiled fauna and may be especially sensitive to increasing water temperatures because of their patchy distribution, limited mobility, limited dispersal, larval dependence on host fish, and the fact that they already inhabit fragmented landscapes. Recent research suggests that many mussel species may currently be living near their upper thermal limits. The hypothesis tested was that elevated water temperatures (20, 25, 30, and 35°C) will adversely affect the survival and physiology (i.e., heart rate and growth rate) of two-month-old juveniles (*Lampsilis abrupta*, *Lampsilis siliquoidea*, *Megalonaias nervosa*, and *Obovaria olivaria*) in 28-d laboratory tests. The 28-d LT50s (lethal temperature affecting 50% of the population) ranged from 19.9 to 30.0°C across species. Heart rates varied greatly ranging, from 9 to 27 beats/minute, and generally decreased with increasing temperature. Heart rate also varied across species and over time and may be a sensitive indicator sublethal indicator of thermal stress. Growth rates differed significantly across temperature, time, and species, but the magnitude of this effect was small. Given that the LT50s are environmentally relevant temperatures in Midwestern rivers, mussels may move vertically or horizontally in sediments to seek thermal refuge. Estimates of upper thermal tolerances in native mussels is urgently needed because elevated water temperatures, caused by global climate change, industrial effluents, drought, or land development could further challenge imperiled mussel communities. These data are being used in a downscaled global climate change model to forecast species responses to climate change and to develop strategies to mitigate adverse effects.

2011 RECIPIENTS OF UNDERGRADUATE RESEARCH AND CREATIVITY GRANTS

Name	Department	Mentor	Title
Abebe Dashew Kahlynn Hunt	Political Science	Ray Block	*Intellectual Property Laws v. The Free-Ride Problem: The Incentives Behind Collective Action in the Face of Principle Law*
Adam Blatter	Sociology	Christine Hippert	*Made in China: Manufacturing Local Development and the rise of a New Rural Society*
Alesha Klein	Archaeology/Anthropology	Timothy McAndrews	*Archaeological Field Work in Sanisera, Spain on a Roman City and Necropolis*
Allison Surber	Recreation Management and Therapeutic Recreation	Susan Murray	*The Hooping Project: A Therapeutic Recreation Hula Hooping Specific Program Design and Evaluation for Women in Transition from Homelessness and Substance Abuse Treatment*
Alyssa Martinson Jennifer McDermott	Psychology	Emily Johnson	*Perceptions of Suicide: Do Catholics and Protestants Differ*
Andrea Turtenwald	Sociology	Carol Miller	*Differences in Maintenance Behaviors in Long Distance v. Gepgraphically Close Dating College Students*
Andrew Appold Brent Bankes	Theatre Arts	Amanda Hart	*Performance without Human Actors*
Andrew Steeno Bryan Zannotti	Music	Karyn Quinn	*The Bill Evans Trio: A Stylistic Analaysis and Application*
Andrew Voelkel	Biology	Meredith Thomsen	*Compensation Responses in Silver Maples to Winter White-tailed Deer Herbivory in the Upper Mississippi River Floodplain Forest: a Quantitative study*
Angela Ko	Psychology	Betsy Morgan	*The Effect of International Experience: Perceptions of Study Abroad*
Ashley Holen	Sociology	Carol Miller	*Attitudes Toward Homosexuality in Ireland*
Atlanta Osgood	Mathematics	Robert Hoar	*Impact of the use of online learning objects in an undergraduate Mathematics Course*
Aubree Thelen	Health Education/Health Promotion	Gary Gilmore	*What does it take to run a free clinic in Kathmandu, Nepal? : An analysis on the history of a Non- Profit.*
Austin Hernandez Kevin Fanshaw	Theatre	Beth Churne	*Dog Sees God*
Benjamin Axell	Biology	Anita Baines	*Quantitative Assessment of American Chestnut Tree Health*
Brian Coffin	Theatre	Beth Cherne	*Manifestations of the Stage: A Study of Classical and Contemporary Physical Acting Methods*
Brianna Tong	Psychology	Dung Ngo	*What is eating you? Food perception amoung college students and its relationship between percieved stress, anxiety, depression, and poor coping skills*

Name	Department	Mentor	Title
Cassandra Botcher	Health Education Health Promotion	Gary Gilmore	*Protective Factors that Appear to Promote the Physical Health an Elderly Afro-Ecuadorian Population*
Celia Erdman	Communication Studies	Tony Docan-Morgan	*"Two Lawyers Walk into a Courtroom…" : An anaylsis of Humor used in the Courtroom*
Clinton Grabhorn	Art	Jennifer Williams-Terpstra	*Art and Revitalization: inspiring creativity and commerce*
Cody Mertens	Geography & Earth Science	Ryan Perroy	*Using X-Ray Flourescence and Statistical Analysis to Quantify the Spatial Distribution of Lead Contamination in La Crosse River Marsh Sediments (0-15cm)*
Courtney Schneider	Biology	Tisha King-Heiden	*Influence of the chorion and age-at-exposure on triclocarban toxicity in zebrafish embryos*
Cynthia Kocik	Sociology/Archaeology	Constance Arzigian	*Analysis of Hopewell Copper Artifacts from the Milwaukee Public Museum*
Daniel Collins	Music	Karyn Quinn	*The Bill Evans Trio: A Stylistic Analaysis and Application*
Danielle Brey	Sociology	Carol Miller	*Parental Divorce's Impact on Grandparent/Grandchild Relationships: A College Grandchild's Perspective*
Danielle Clotueir	Microbiology	Bonnie Bratina	*Investigating the Gut Microbiota of Arion fasciatus Across Geograhpic, Temporal and Seasonal Boundaries*
Donica Spence	Sociology	Christene Hippert	*Sexually Explicit Lyrics and their Influence on Jamaican Adolescents' perceptions and attitudes about sex.*
Elizabeth Bowman	Art	Binod Shrestha	*Savage: Researching contemporary mythology of the Navajo Nations and preservation of their art in the modern world*
Elizabeth Metz	Theatre	Beth Cherne	*Comparative Analysis of Mandala Center for Change and Social Change*
Ethan Rogers	Sociology	Nicholas Bakken	*Substance Use and Risky Sexual Behavior among High School Students*
Francesca Bautista	Psychology	Betty DeBoer	*Social Worker's Knowledge on Reactive Attachment Disorder: Is Current Training Sufficient?*
Hoang Vo	Information Systems	Hua Dai	*Applying Web 2.0 and Related Technologies in Diversity Education to Enhance Student Learning*
James McDermott	Chemistry	Todd Weaver	*Structure function differentiation of beta-edge variants of hemolysin A beta-edge variants using multi-angle light scattering*
Janet Yearous	French	Jennifer Howell	*French Language Education in Morocco*
Jared Bender	Political Science and Public Administration	Jo Arney	*Sustainable La Crosse: A Network Analysis of Gundersen Lutheran and Their Community Partners*
Jeffrey Albrecht	Psychology	Tesia Marshink	*Inspired to Learn: Positive Psychology & College Outcomes*
Jennah Arndt	Psychology	Katherine Kortenkamp	*Can Marathon Running Make You High?: Differences in Mood Between Short-and-*

Name	Department	Mentor	Title
			Long Distance Runners
Jessalyn Kimball	Art and Philosophy	Joel Elgin Sam Cocks	*Gauguin and the Philosophy of Primitivism*
Jose Rubio-Zepeda	Political Science/Anthropolgy	Ray Block and Christine Hippert	*Coloring a Multilayered Nation: Café con Leche (Coffee with Milk)*
Julie Krueger	Sociology	Carol Miller	*The Development, Management, and Impact of the Atheist Identity*
Karyn Cecele	Health Education/Health Promotion	Tracy Caravella	*Content Analysis of Sexual Health Curricula in Four Rural Health Districsts*
Kate Norgon	Archaeology	David Anderson	*Archaeological Field School in Hualcayan*
Katie Vosters	Health Education/Health Promotion	Emily Whitney	*An assesment of stress in female coachs:A qualitative study*
Kaylee Beckwith Nicole Long	Biology	Sumei Liu	*Effects of restraint stress on CRF and CRF2 receptor expression in enteric neurons in the rat stomach.*
Kelly Ehleiter Sarah Jacobson	Psychology	Betsy Morgan	*Excuse Me would You Mind? The Relationship between Interracial Couples and the help they recieve*
Kelsea Groves	Sociology	Timothy Gongaware	*Graffiti and Graffiti Artists in Hong Kong*
Kelsey Anderson	Therapeutic Recreation	Patricia Ardovino	*A Comparison of Recreation Activities Offered to People with Disabilities in La Crosse, Wisconsin and Atenas, Costa Rica*
Kirk Benson	Art	Joel Elgin	*Discovering the History and Modern Practice of Letterpress Printing*
Kristen Kauphusman	Psychology	Ryan McKelley	*Perceptions of Relationship Intimacy: Face-to-Face Interaction versus Texting*
Kyle Oxton	Physics	Shelly Lesher	*Complementary Neutron Efficiency Measurements Using VANDLE*
Laura Paulson	Theatre Arts	Beth Cherne	*Theatre Workshop's Promote Learning and Cooperation*
Lucas Purnell	Political Science	Jo Arney	*What's on the line: The Ecological Economics Behind Asian Carp*
Luke Konkol	Philosophy	Sam Cocks	*The Spread and Preservation of Animistic Philosophies out of Evolutionary necessity Via Psychological and Cultural Developments*
Marla Kuchler	Sociology	Carol Miller	*Women's Experiences During Childbirth: Planned Home versus Hospital Birth*
Matt Nighbor	Finance	Shane Van Dalsem	*A Practical Application of Relative Strength*
Matthew Mauseth	Chemistry	Todd Weaver	*Stability Contributions of Hydrogen Bonds in the Third Circuit of Hemolysin A from Proteus mirabilis*
Megan Bain	Geography	Ryan Perroy	*Quantifying the effects of exposure to different educational materials on the amount of collected post-consumer food waste for the UW-La Crosse Vermicom Posting Program*

Name	Department	Mentor	Title
Megan Clark	History	John Grider	*One Hundred Years at Devil's Lake State Park: Its Influence on Wisconsin State Histroy*
Meghan McClellan	Community Health Education	Robert Jecklin	*Self-reported Understanding of Attention-Deficit/Hyperactivity Disorder Among Undergraduate Students at a Midwestern University*
Melissa Hill	Microbiology	Bill Schwan	*Create and Characterize FimB mutants involved in Type 1 pili expression in Uropathogenic Escherichia coli*
Nathali Niedorowski	Exercise and Sport Science	Carl Foster	*The Reproducibility of Session RPE in Workouts*
Pa Houa Vang	Educational Studies	Ann Epstein Barbara Gander	*Early Childhood: Dual Language Learners*
Patrick Copp	Physics	Shelly Lesher	*Complementary Neutron Efficiency Measurements Using VANDLE*
Ryan Nell	SAA Graduate Program	Jorg Vianden	*A Qualitative Study on Negotiating Physical Disability on a College Campus*
Samuel Schaus	Political Science	Jo Arney	*Inaccurate agenda Setting: A Case Study Examining Current Brucellosis Policy within the Greater Yellowstone Area*
Sarah Branson Kelsey Greenwood	Psychology	Bianca Basten	*"That's not who I thought you were." Stability of first Impressions*
Sarah Grandstrand	Biology	Tisha King-Heiden	*Impact of Dissolved Organic Carbon on the Developmental Toxicity of the Emerging Organic Contaminant Trilocarban*
Sarah Kroth	Theatre Arts	Walter Elder	*"Maori Aoteara: A Study of how the Native Maori Cultural Influences the Depictions of Women in Modern New Zealand Theatre and Dramatic Literature"*
Sean Mobley	History/Communication Studies	John Grider & Patricia Turner	*Mr. Bojangles, The Tap Man*
Sigrid Splinter Yessa Caylie	Psychology	Casey Tobin	*Reely Wrong: Reactions to Inaccurate Portrayals of Schizophrenia*
Sydney Lomnes	Microbiology	Bonnie Bratina	*Determination of Buttiauxella location and structure within Arion fasciatus using Flourescent in situ hybridization*
Vanessa Schwartz	Psychology	Bianca Basten	*Risky Business: The Influence of Affect on Risk-Perception and Risk-Taking*
Yang Cha Thao	Therapeutic Recreation	Jearold Holland	*Creating Connections: Hmoung Culture, Recreation, Leisure Activities, and Treatment Implications to Provide Cultural Competencies for Therapeutic Recreation*

2011 Recipients of the Graduate Research, Service and Educational Leadership Awards

Student's Name	Department	Faculty Sponsor	Title
Michelle Anderson	School Psychology	Jocelyn Newton	*Factors of Resiliency and Depression in Adolescents*
Ashley Brown	Exercise and Sport Science	Mark Gibson	*The Validity and Reliability of the Lane Agility Drill*
Jonathan Carver	Biology	Tom Volk	*The Potential Use of Dark Septate Endophytes in Improving Agriculture*
Josh Christen	Exercise and Sport Science	Carl Foster	*The Effect of Post-Exercise Rating Time on Session RPE*
Ben Cogger	Biology	Meredith Thomsen	*Interactive Effects of Flooding and White-Tailed Deer Herbivory on Tree Seedling Recruitment in Floodplain Forests of the Upper Mississippi River*
Kasey Crawford	Exercise and Sport Science	Glenn Wright	*The Role of Fatigue in Power Training of College Gymnasts*
Timothy Curry	Exercise and Sport Science	Carl Foster	*Predicting Time Trial Performance Based on Physiological Variables Present During Warm-up*
Tim Demmer	Biology	Bradley Seebach	*Determination of Progesterone or it's Metabolite 5α-dihydroprogesterone in Providing Neuroprotection Through Up-Regulation of BDNF and TRKB Following Neuronal Injury in vivo*
Michelle Freeman	Biology	Peg Maher	*Cytokine Fatty Acid and Glucose Metabolic Regulation in Adipocytes from Lean and Obese Individuals*
Stephanie Gatyas	Biology	Eric Strauss	*The Effect of Macrophytes on Organic Carbon Retention in Stream Ecosystems*
Molly Grames, Katelyn Weis	Health Professions	John Greany	*The Biomechanical and Physiological Benefits of Martial Arts in Children with Autism Spectrum Disorders*
April Grimsled	Biology	Mike Winfrey	*Rapid Molecular Identification of ESBL-Producing E. coli Urinary Tract Infection Isolates and Implications in Infection Control*
Craig Herman	Biology	Nicholas Downey	*Utilization of Yeast-1-Hybrid System to Identify a Minicircle Bent DNA-Binding Protein in Trypanosoma brucei*
Mark Isaacson	Exercise and Sport Science	Glenn Wright	*Sandbag Test*
Salvador Jaime	Exercise and Sport Science	Carl Foster	*The Effect of Manipulating the Pre-Exercise Template on Time-Trial Performance*
Katherine Josephson	Biology	Greg Sandland	*The Effects of Nutrient Restriction on the Interaction between Aquatic Snail Biomphalaria glabrata and its Trematode Parasite Schistosoma mansoni*
Megan Knutson	Exercise and Sport Science	John Porcari	*LifeMoves Effect on Perceived Stress, Blood Pressure, Resting Heart Rate and Respiratory Rate*

Student's Name	Department	Faculty Sponsor	Title
Vong Lao	Educational Studies	Donald Sloan	*Empowering Identity through Art*
Meghan Michalski	Exercise and Sport Science	Carl Foster	*The Effects of Secondhand Smoke Exposure During Adolescence on Adult Lung Function*
Rachel Nelson, Andrew Oebser, Tara Schmitz	Health Professions	John Greany	*The Psycho-Social Benefits of Martial Arts Participation in Children with Autism Spectrum Disorders*
Kate Nyberg	Exercise and Sport Science	Carl Foster	*Effect of Disparities in Pacing Template and Expected Feedback on Cycling Performance*
Angela Ratekin	Biology	Tom Volk	*The Immune Response of Human Neutrophils to Virulence Factor BAD1: Comparing Two Genetic Groups of Blastomyces dermatitidis*
Emily Reinke	Biology	Anne Galbraith	*Expression and Interaction of Cdc7 and Dbf4 during Meiosis*
Brandon Reuter	Biology	William Schwan	*Cloning and Mutational Analysis of the fimB Promoters in Uropathogenic Escherichia coli*
Kelly Rock	Biology	Michael Hoffman	*Characterization of a Novel Virus Isolated from Largemouth Bass (Micropterus salmoides) in Pool 10 of the Mississippi River*
Amanda Sanders	Biology	Peg Maher	*Polycystic Ovary Syndrome: Associations with Hormonal Regulation of Eating and Metabolism*
Josef Schwartz	Biology	Mark Sandheinrich	*Gene Regulation Changes in Northern Pike Due to Methylmercury Contamination*
Phillip Scruggs	Exercise and Sport Science	Glenn Wright	*Hormonal Analysis of an Incremental Sandbag Lifting Test for Wrestling*
Victor Sherony	Biology	Bonnie Bratina	*Comparison of Gut Microbial Community Structure and Abundance in Thirteen-lined Ground Squirrels Throughout Hibernation*
Timothy Suchomel	Exercise and Sport Science	Glenn Wright	*Comparison of the Power Development between the Hang Clean, Hang Jump-Shrug, and Hang High Pull Exercises*
Andrea Wagner	Student Affairs Administration	Jörg Vianden	*A Qualitative Exploration of Universtities' Travel Policies in Mitigating Risk to Graduate Students Traveling Abroad*

CONGRATULATIONS – GRADUATE STUDENTS!

2011 Graduate Thesis Award Recipient:

Ann Rentschler – Master of Science in Biology: Clinical Microbiology
Mentor: William Schwan
In Vitro Analysis of OmpR Regulation of the fimB and the fimE Genes of Uropathogenic Escherichia coli

2011 Graduate Academic Achievement Award Recipients:

Amanda Nogle – Master of Public Health
Mentor: Gary Gilmore

Elisabeth Jarvis Paluch – Master of Science in Biology
Mentors: Meredith Thomsen and Tom Volk

2011-2012 Undergraduate & Graduate Committees

Undergraduate Research Committee Members & Consultants

- Keely Rees
- Anita Baines
- Emily Johnson
- Marti Lybeck
- Tony Docan-Morgan (Fall 2011)
- Stephen Lewis
- Gretchen Gerrish (Spring 2012)
- Amanda Hart
- Shelly Lesher
- Kelly McDonough
- Scott Cooper, Consultant
- Emily Jacobson, Consultant
- Paul Fitts, Consultant

Graduate Council Committee Members & Consultants

- Kasilingam Periyasamy
- Melissa Bingham
- Gary Gilmore
- John Greany
- Robert Krajewski
- James Murray
- Anton Sanderfoot
- Steven Simpson
- Gary Willhite
- Katherine Josephson, Student Representative
- Connor Doyle, Student Representative
- Robert Hoar, Consultant
- Ray Abhold, Consultant
- Chris Bakkum, Consultant
- Charles Martin-Stanley, Consultant
- Bruce May, Consultant

Presenter Index

U=undergraduate poster; UR=undergraduate oral; G=graduate poster; GRAD=graduate oral; E=exhibit

NAME	ABSTRACT NUMBER(S)	NAME	ABSTRACT NUMBER(S)	NAME	ABSTRACT NUMBER(S)
Albrecht, Jeffrey	U.30, U.75	DuBois, Erin	UR.22	Jansen, Maria	U.9
Almonroeder, Thomas	G.29	Ehleiter, Kelly	U.31	Jens, Cassandra	U.17
Anderson, Kelsey	U.83	Eliades, Lauren	U.5	John, Amanda	G.14
Appold, Andrew	E.1	Ellis, Eric	G.14	Johnson, Geoffrey	U.59, U.62, U.65, U.66
Arndt, Jennah	U.76	Erickson, Sara	UR.3	Johnson, Mitchell	UR.19
Ash, Ashley	G.7	Erlandson, Martin	U.5	Jones, Christopher	U.51
Axell, Benjamin	U.8	Fedor, Karali	U.14	Josephson, Katie	G.1
Bain, Megan	U.20	Fitts, Paul	G.17	Kamp, Amie	U.30
Bankes, Brent	E.1	Flackey, Nicole	U.53	Kasten, Megan	U.39
Barnes, Nicole	U.40	Foley, Greta	UR.18	Kaufman, Leah	U.67
Bautista, Francesca	U.73	Folster, Carlton	U.42	Kersten, Rachel	U.70
Beckwith, Kaylee	U.44	Fortuine, Heather	G.9	Khalili, Ali	U.24
Beduhn, Lindsay	G.7	Ganser, Alissa	GRAD.1	Kimball, Jessalyn	E.2
Bender, Jared	U.81	Ganser, Jaden	G.19	Klein, Alesha	U.4
Benson, Kirk	E.3	Garinger, Amy Jo	U.80	Klein, Kendra	U.66
Bloome, Aiyana	U.16	Gleason, Andrea	G.7	KLuz, Allison	U.59
Bolz, Kelsie	U.15	Gnewikow, Whitney	G.30	Knutson, Megan	G.5
Bradley, Adam	U.7	Gorski, Emily	G.18	Kocik, Cynthia	U.101
Branson, Sarah	U.77	Grames, Molly	G.15	Koepke, Zachary	G.30
Bremer, Emma	U.3	Grande, Petre	G.10	Kubicek, Allison	U.70
Bremer, Holly	U.61	Greenwood, Kelsey	U.77	Kuchler, Marla	U.33
Brey, Danielle	U.34	Grimm, Ericka	G.20	Laack, Andrew	G.29
Brown, Ashley	G.4	Gross, Megan	U.6	Lane, Michelle	U.55, U.72
Cadwell, Kristi	G.5	Hanson, Chase	U.11, U.28	Larsen, Kevin	U.46, U.47
Cecele, Karyn	UR.20	Hautala, Mackenzie	U.49	Laube, Emily	U.28
		Hawley, Amber	U.36	Lepak, Ryan	U.42
Chihak, Sasha	U.48	Hecht, David Matthew	U.13	Lewandowski, Kevin	G.23
Clark, Megan	UR.23	Heemstra, Chad	U.1, U.35	Lewis, Quinn	U.54
Cloutier, Danielle	U.57	Heggeseth, Nate	G.6	Lomnes, Sydney	U.56
Coffin, Brian	E.4	Heisel, Mary	UR.24	Long, Nicole	U.43
Collins, Dan	E.5	Helmer, Sarah	U.26	Ludwigson, Jordan	U.42
Cooper, Cory	G.25	Hill, Emily	G.16	Lynum, Christopher	UR.6
Crawford, Kasey	G.3	Hoeldtke, Russell	U.30	MacFarland, Douglas	U.50
DeGrood, Rachel	G.16	Hunt, Christopher	U.59, U.62, U.65, U.66	MacKenzie, Austin	UR.14
DeJarlais, Bryan	G.29	Huntley, Ashley	U.62	Mally, Kristin	G.4
DeMers, Anna	G.31	Hurley, Kristin	G.7		
Demmer, Tim	G.2	Hutchinson, Connor	U.41	McDermott, Jim	UR.9
Demorett, Joshua	U.70	Issacson, Mark	G.11	McElroy, Kathryn	G.14
Draeving, Tiffany	U.11, U.28	Jacobson, Sarah	U.31		

NAME	ABSTRACT NUMBER(S)	NAME	ABSTRACT NUMBER(S)	NAME	ABSTRACT NUMBER(S)
Medina-Bielski, Sara	U.55, U.72	Schmeichel, Nicole	U.11,		
Melby, Patrick	U.69	Schmidt, Melanie	U.13	Zannotti, Bryan	E.5
Mertens, Cody	U.21	Schmitz, Tara	G.13	Zimmerman, Kristin	U.25
Mladucky, John	U.63	Schneider, Rebecca	U.12	Zinschlag, Bryan	UR.10
Mobley, Sean	UR.1, UR.26	Schommer, Katelyn	U.65	Bankes,Brent	E.6
Moldysz, Pawel	G.16	Schreiner, Kali	U.41	Bankes, Brandon	E.7
Moncada, Ryan	U.14	Schultz, Ashley	G.27	Matthew Mauseth	U.84
Naegle, Tim	U.11, U.28	Schwartz, Vanessa	U.79	Blatter, Adam	U.102
Nehls, John	UR.5	Sedbrook, Lauren	U.70		
Nell, Ryan	U.23	Seifert, Allison	U.53		
Nelson, Rachel	G.13	Sharpee, Ryan	G.14		
Nereng, TJ	G.6	Sodemann, Sarah	UR.4		
Nighbor, Matt	UR.12	Spence, Donica	UR.15		
Norgon, Kate	U.2	Splinter, Sigrid	U.74		
Novak, Mackenzie	U.68	Stark, Elizabeth	U.32		
Oebser, Andrew	G.13	Starlin, Julius	UR.21		
Oetzel, Luke	U.47	Steeno, Andrew	E.5		
Olson, Nathan	G.8	Stenzel, Nicollette	U.61		
Olson, Samantha	U.52	Suchomel, Timothy	U.53, G.28		
Ophime, Chelsea	U.80	Talhouarne, Gaelle	U.44		
Parker, Amber	U.60	Thao, Yang Cha	UR.11		
Paulson, Laura	U.82	Thelen, Aubree	U.58		
Payne, Sarah	G.24	Tirabassi, Andrea	G.21		
Payne, Simon	UR.16	Tong, Briana	UR.8		
Peller, Patrick	U.59, U.62, U.65, U.66	Turtenwald, Andrea	UR.17		
Perez, Carmen Alicia Rivera	U.41	Vance, Adam	U.63		
Peterson, Brian	G.30	VanEyll, Emily	G.32		
Peterson, Jared	U.78	Vang, Pa Houa	U.18		
Pielage, Nicole	U.30	Voelkel, Andrew	U.10		
Pschorr, Maximilian	U.38	Vosters, Katie	U.19		
Pulvermacher, Megan	G.20	Wagner, Andrea	G.26		
Purnell, Lucas	U.71	Wanderski, Bethany	G.6		
Raplinger, Kate	U.64	Watts, Ian	U.37		
Reneir, Natalie	U.14	Wegman, Angelica	G.22		
Reuter, Brandon	G.12	Wegner, Alexander	U.22		
Rittenhouse, Matthew	U.9	Weis, Katelin	G.15		
Rogers, Ethan	UR.2	Wellenkotter, Jedd	G.16		
Rooker, Angela	UR.7	Wenzel, Mike	G.6		
Rubio-Zepeda, José	U.29	Wiepz, Jamie	U.100		
Running, Mitchell	UR.25	Wouters, Isaac	G.29		
Rusch, Alexis	U.32	Yearous, Janet	UR.13		
Sabel, Emma	U.45, U.47	Yessa, Caylie	U.74		
Savage, Theodore	U.47				
Schack, Emily	G.10				

ACKNOWLEDGEMENTS

The 2011 Celebration of Student Research and Creativity is sponsored by the UW-La Crosse Office of Undergraduate Research, with funding from the Provost and Vice Chancellor for Academic Affairs, Office of International Education, and the Office of Graduate Studies.

Our special thanks are due to the members of the Undergraduate Research and Creativity Committee and the Graduate Council.

ABSTRACT BOOK EDITORS

SCOTT COOPER
EMILY JACOBSON
PAUL FITTS
CAITLIN HANSEN
MARIA MORITZ

COMMENTS OR SUGGESTIONS?

We welcome your comments and suggestions about the Celebration. Please send them to stdtresearch@uwlax.edu.