

**5th Annual
University of Wisconsin System
Symposium for Undergraduate
Research and Creative Activity**



**April 28, 2004
Reeve Memorial Union
University of Wisconsin Oshkosh**



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Undergraduate Research and Creative Activity***

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Schedule of Events

Acknowledgements

University of Wisconsin System Administration

UW Oshkosh Provost's Office

UW Oshkosh Office of Grants and Faculty Development

UW Oshkosh Division of Continuing Education and Extension

UW Oshkosh University Relations

UW Oshkosh Instructional Resources Center & Presentations Lab

Reeve Memorial Union

University of Wisconsin System Campus Representatives

Shirley Hensch, UW Colleges

Christopher Lind, UW Eau Claire

Joyce Salisbury, UW Green Bay

William Gresens, UW La Crosse

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William Campbell, UW River Falls

Diane Bywaters, UW Stevens Point

David Prior, UW Superior

Susan Foxwell, UW Stout

Bruce Eshelman, UW Whitewater

✧ A Letter from the Chancellor and the Provost ✧

April 28, 2004

Dear Colleagues and Guests,

The University of Wisconsin Oshkosh is pleased to host the fifth annual University of Wisconsin System Symposium for Undergraduate Research and Creative Activity. This event represents the commitment that UW System campuses have made to the undergraduate research experience.

We share your commitment to faculty-mentored research and creative activity as an essential component of undergraduate education. As students develop the skills and knowledge needed to complete their projects, they also cultivate a passion for their disciplines. Many build the confidence they need to pursue careers that include research activities.

On behalf of the UW Oshkosh community, we extend a warm welcome to nearly 200 students, faculty mentors and guests from across the UW System.

Our appreciation goes to UW Oshkosh Division of Continuing Education and Extension for organizing this conference. In addition, our special thanks to UW Oshkosh Office of Grants and Faculty Development for managing this conference and for its year-round efforts in encouraging research through the UW Oshkosh Student and Faculty Collaborative Research Program.

Congratulations to undergraduate researchers who are presenting here today, and thank you to their faculty mentors. We hope you enjoy this celebration of undergraduate scholarship.

Sincerely,

Richard H. Wells
Chancellor

Keith T. Miller
Provost and Vice Chancellor

Keynote Speaker

Cora B. Marrett

Senior Vice President, Academic Affairs
University of Wisconsin System

CORA B. MARRETT joined the University of Wisconsin System as Senior Vice President for Academic Affairs on August 1, 2001. She assumed this position after serving for four years as Vice Chancellor for Academic Affairs and Provost at the University of Massachusetts-Amherst. She has held faculty appointments at the University of Wisconsin-Madison, Western Michigan University and the University of North Carolina at Chapel Hill. In 1992 she became Assistant Director for the Social, Behavioral and Economic Sciences at the National Science Foundation, chosen after a national search for a permanent head. From 1990 to 1992, she held a half-time appointment while serving as director of two programs for the United Negro College Fund under a grant from the Andrew Mellon Foundation. During 1976-77, Marrett was on leave as a fellow at the Center for Advanced Study in the Behavioral Sciences in California. Her academic background includes a B.A. degree from Virginia Union University and M.A. and Ph.D. degrees from UW-Madison, all in sociology.

Currently, she is a member of the boards for Science Service and the Russell Sage Foundation. She is a Fellow of the American Association for the Advancement of Science, the American Academy of Arts and Sciences, and Sigma Xi, the Science Research Society.

Creative Activity/ Gallery Exhibits

Room 221 (Gallery Exhibits)

Theatre 307 (Artistic & Film Presentations)

Abstracts

** abstracts have been edited only for consistency of style*

#CA1

After the Thaw: Poetry of Things Passing. *Adam Houle (Denise Sweet), Department of Humanistic Studies TH 331, UW Green Bay, 2420 Nicolet Drive, Green Bay, WI 54311*

In his introduction to *The Best American Poetry 2003*, Yusef Komunyakaa asks artists, “Can we risk a deficit in memory, in the erasure of recent history?” Inherent in his question is an anxiety partially explained by trends that place obscurity and aloofness as virtues in contemporary poetry. This project stems from a shared concern that currents of apathy coursing beneath the poetry of many artists have diminished the role of poetry as a means of personal and social remembrance. If continued, this paradigm shift will render poetry into meaningless verbiage lacking the immediacy and virility necessary to influence the present through its artistic conception of emotive, intellectual and physical experience. In order to stay this slide toward irrelevancy, this project will display a small cross-section of poems with the intention of demonstrating the importance of personal narrative chronicling the fluxes of existence. Through the pieces as well as commentary, *After the Thaw: Poetry of Things Passing* argues for content and aesthetics that acknowledge the importance of personal history within the social context.

#CA2

Sound Suspension Performance Titled: *Dancesculpercussion*. *Paul Leonard (Kristin Thielking), College of Fine Arts Sculpture Department, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

It is my intent to speak on the motivation of the collaborative project shared by the Sculpture, Dance, and Percussion departments for which I received the Student Research Fund Grant during the fall of 2002-2003. The result of this collaborative project was a 45-minute production titled *Dancesculpercussion*. I will also share my experience as a leader working to bring this project to its completion, as well as the role I have taken in fostering an environment of community interaction in accordance with other organizations and my art. The Sound Suspension project was designed to explore the field of sculptural instruments. These instruments are assembled primarily out of found objects, those being recovered from scrap metal yards in the Stevens Point and/or central Wisconsin area. This project can be viewed as a continuation of earlier works of mine, such as a furniture piece titled *Conversation for Two* (this piece will be exhibited in a PowerPoint presentation). It was with this project that I began to explore ideas of alternative ways to support objects most of us use on a daily basis, as well as to create specific environments for us to function in.

#CA3

Release the Compassion: A Polio Epidemic Documentary. *Thomas Pistohl (Ralph Beliveau and Stephen Kercher), Departments of Communication-Radio/Television/Film and History, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Release the Compassion is a polio epidemic documentary covering the many aspects of a now forgotten disease. University of Wisconsin Oshkosh students Tom Pistohl, Valerie Brandt and Amanda Boeker collaborated from the departments of Communication-Radio/Television/Film and History with Professors Ralph Beliveau and Stephen Kercher in researching a narrative and documenting the social and historical aspects of this period in our national and local history; with the assistance of participants in biology, psychology, and nursing classes, instructed by Professors Teri Shors, Susan McFadden and Cheryl Lapp. This documentary has received funding from the

UW Oshkosh Student and Faculty Collaborative Research Program and an Art Board Grant from the Oshkosh Community Foundation. The project has recorded the many experiences of residents of the Fox Valley, searched through several state and national archives, and visited the birthplace of the National Foundation for Infantile Paralysis in Warm Springs, Georgia. Extensive audio and video interviews were conducted during both the research and production phases. Students explored this historical event in an investigative process that created the privilege of recording the many experiences and triumphs of individuals affected by polio. Through this documentary, we hope that some of these experiences and lessons can be shared, as the number of survivors is fading.

#CA4

Disability Awareness Month Traveling Pictorial. *Richard Fedor (Anne Statham), Department of Communication, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Persons with disabilities are an often-forgotten segment of the population. Disability Awareness Month was created to facilitate understanding of disabilities and to celebrate those who have disabilities. As a member of the steering committee for Kenosha's first ever participation in Disability Awareness Month, Richard created a traveling pictorial based on interviews that he conducted with 11 individuals who have disabilities. The pictorial consists of a picture and a brief biography of each person Richard interviewed. Richard chose who he interviewed based on recommendations from other members of the steering committee. The purpose of the pictorial is to show the viewer that a person with a disability can still do things that a "normal" person can do. This pictorial was unveiled at a kickoff event on October 1, 2003. It then traveled to four different locations around Kenosha so that many would have an opportunity to view it. This project was very successful and made a great step forward in raising awareness of disabilities in Kenosha.

#CA5

A Comprehensive Plan for Downtown Green Bay. *Matt Bogenschutz, Toni Buschke, Stacie Danforth, Michael Huth, Jennifer Iwanski, Jaime Kennelly, Suzanne Kohlmann, Mark Kolasa, Jason Myhre, Brian Peot, Christopher Schanz and Darci White (David Damkoehler, Communication and the Arts, and Ronald K Baba, Urban and Regional Studies), UW Green Bay, 2420 Nicolet Drive, Green Bay, WI 54311*

After extensive interdisciplinary research, the members of the UW-Green Bay Environmental Design Program designed a comprehensive redevelopment plan for downtown Green Bay, Wisconsin. A common consequence of urban sprawl is the migration of economic activity from the city's central core to retail centers in the suburban fringe. The physical and behavioral changes that result from this migration give rise to significant questions about the planning and design of existing downtowns. In the 30 years since the completion of its retail mall complex, the downtown district of Green Bay experienced a slow deterioration that paralleled its loss of economic purpose. Thus, the planning and urban design challenge posed by downtown Green Bay is to refocus its use and develop strategic goals, policy criteria and implementations programs that will guide its redevelopment. The Environmental Design Studio developed a comprehensive proposal for the redevelopment of downtown Green Bay into a destination entertainment district. This goal was derived from an analysis of land economics, the existing mix of building uses, recent additions to the downtown (a new convention center and the rehabilitation of an historic theater) and a potential natural amenity—the Fox River. After extensive research, the members of the studio developed proposals for access, pedestrian and

automobile movement systems, parking facilities, site design standards, cold weather design standards and an integrated land use plan for the district. The plan was presented in public meetings to the mayor and members of the Green Bay City Council, the City Development Committee and representatives of the business community.

Oral Session I

*Rooms 213, 214, 215, 220, 221
8:30 to 10:00 a.m.*

Abstracts

** abstracts have been edited only for consistency of style*

#OI-1

Collagen Gene Expression in Mice: Effects of Dietary Silicon and TNF- α . *Adam Burrack, Steven Hull, Katie Ek-Pangerl, Desiree Nardini, Jennifer Hopps and Carol Seaborn (Scott Zimmerman), Departments of Biology and Food and Nutrition, UW Stout, P.O. Box 790, Menomonie, WI 54751; and Forrest Nielsen, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, ND*

Sixteen weanling transgenic mice containing the green fluorescent protein (GFP) gene linked to the type I collagen gene promoter were fed a low silicon (Si) casein/corn diet. GFP is expressed in these mice if the type I collagen gene promoter has been induced. Mice ranging from six to 12.5 weeks of age received a subcutaneous wound (PVA sponge implantation) and were randomly assigned to either a Si-low or Si-adequate diet (35 ppm Si). Skin from the shoulder area and heparinized blood were removed three weeks later. Plasma TNF- α was quantified by ELISA. Skin samples were analyzed for protein concentration (BSA assay) and relative fluorescence. TNF- α was significantly higher in the Si-low than Si-adequate mice (206.3 pg/ml vs. 188.3 pg/ml). This difference was gender specific. Si-low females had higher TNF- α than Si-adequate females (211.6 pg/ml vs. 187.1 pg/ml). There were no significant differences in plasma TNF- α between male mice. Mice fed Si-low diets exhibited higher skin fluorescence than mice fed the Si-adequate diets (0.518 vs. 0.401). Higher TNF- α in Si-low mice suggests that Si affects TNF- α expression. Higher relative skin fluorescence in Si-low animals suggests Si influences the expression of Type I collagen in mice with chronic silicon deficiency.

#OI-2

Particulate Methane Monooxygenase Gene Diversity from Dilute Peat Soil Enrichment Cultures. *Tracy Campbell (Stephen Nold and Michele Zwolinski), Department of Biology, UW Stout, P.O. Box 790, Menomonie, WI 54751*

Methane oxidizing bacteria (MOB) in northern peatlands help regulate methane flux to the atmosphere. Our objective is to identify the most abundant and active MOB populations from a fen in northern Wisconsin and a bog in northern Minnesota. Each site was sampled in the aerobic zone (0-10 cm depth) and at the aerobic-anaerobic interface (10-20 cm depth). To enrich the most abundant MOB, each peat sample was serially diluted (ten-fold) in minimal salts medium, supplied with a 50:50 mixture of $^{13}\text{CH}_4$ or $^{12}\text{CH}_4$ and air, and incubated in sealed serum vials for 10 weeks at room temperature. Methane consumption was monitored by GC-FID gas headspace analysis. Here we present the diversity of the most abundant MOB in the $^{13}\text{CH}_4$ -fed enrichments based on the sequences of the particulate methane monooxygenase (*pmoA*) genes. The enzyme pMOA converts methane to methanol, the first step in methane oxidation, and is present in most MOB. This work supports concurrent analysis of the 16S rRNA gene diversity and lipid profiles of the microbial community of MOB enriched from the peatlands.

#OI-3

UW La Crosse Students' Knowledge of Undergraduate Research Opportunities. *David Bazett-Jones and Courtney Wigdahl (Brooke Fridley), Department of Mathematics – Statistics, UW La Crosse, 1725 State St., La Crosse, WI 54601*

UW La Crosse offers unique opportunities for students in every field and undergraduate Research (UR) is one such opportunity. Through UR, students can gain practical experience in their respective fields and learn how to apply classroom knowledge to real-world situations. It is not known at what levels students are informed of, participate in, and perceive these opportunities.

Therefore, it is this study's purpose to investigate these unknowns. A stratified sampling design (16 strata) was used to randomly sample 576 undergraduate students from the university population of 8,002 using an online survey. There were three main subpopulations of interest, categorized by year in school (by credit number), college, and by year in school within each college. A total of 229 subjects participated in the survey. The overall awareness mean was 1.48 ± 0.17 on a scale from 0 to 5. The overall proportion of undergraduates who had performed UR was 0.12 ± 0.05 . An estimated $79.5 \pm 0.65\%$ of undergraduates had a positive perception of UR at UW La Crosse. The information gathered here is helpful in understanding how undergraduate research affects UW La Crosse and other system campuses, and may be useful to administration and faculty who are working to increase participation.

#OI-4

Statistical Database of the Number of Medical Facilities in Milwaukee Using Clinical Computerized Medical Records. *Ryan Dunsirn (Ann Greer), Department of Sociology, UW Milwaukee, 2200 E. Kenwood Blvd., Milwaukee, WI 53211*

It is widely believed that computerized medical records are integral to achieving substantial quality improvement for health care at medical practices. However, the number of medical practices using computerized medical records is relatively low and unknown. Most medical practices use computers for billing or office scheduling, but computers are rarely used to organize clinical and ambulatory records. This project is a supplemental investigation to a 1984-1987 study of physician attitudes toward the computerization of the ambulatory record at the University of Nebraska-Omaha completed by Ann Greer. The project initiative is to find an inferential percentage of medical practices using computerized medical records in Milwaukee, Wisconsin. The project focus is on "primary care specialties," which include general internal medicine, family practice, obstetrics and gynecology, and pediatrics. By making personal telephone interviews to our random sample, we will be able to infer a percentage of medical practices using computerized medical records in Milwaukee, Wisconsin. All information recorded will be compacted and organized in a statistical database at University of Wisconsin-Milwaukee. A statistical database will serve as a foundation for all research exploring the ability for computerized medical records to improve the quality and effectiveness of health care.

#OI-5

Multiple Regression Analysis of Worldwide Life Expectancy. *Andrew Rank (Kevin McGee), Department of Economics, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Economic theory suggests that variations in average life expectancy across nations can be explained by many economic and social factors. In this study, I construct a cross-sectional model of life expectancy, which analyzes the impact of macro level variables on average life expectancy across countries. The data for this analysis study was obtained from the 2001 United Nations Development Programme - Human Development Report. Variants in the model suggest that proxies for healthcare expenditures and the prevalence of HIV/AIDS both have a statistically significant effect on the national variation in life expectancy ($p < 0.05$). A dummy variable representing African countries was also proven to be a significant indicator, limiting some of the explanation of the HIV/AIDS variable. Two other variables tested—the mean years of schooling and number of physicians per capita—did not prove to be significant explanations for life expectancy, contrary to previous studies. The results suggest the importance of addressing HIV/AIDS in Africa as a component of international efforts to improve the quality of life and increase life expectancy worldwide.

#OI-6

Can't Buy Me Love: Consumerism, Values and Media. *Patricia Enevold (Fay Akindes), Department of Communication, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Consumerism has been described as widespread personal consumption rather than socially conscious and useful investment in the public sphere. Media is seen as the primary instrument of advertising in generating consumer culture and distracting people from social and public matters. This leads to self-centeredness and the reluctance to find resources for the public realm. Shopping can be viewed as different things to different people. At times, shopping is a competition; other times, shopping is a diversion or reward. Scholars believe that spending shows both social inequalities and reproduces, as well as creates, those distinctions. Our consumption goals are so unachievable that we threaten our social and biological infrastructures. Some suggestions for simplifying: making exclusivity uncool, sharing goods, deconstructing commercials and avoiding retail therapy. This paper problematizes consumerism, values and media in the context of my family, specifically my 25-year-old daughter and myself. It includes self-reflection, conversations with my daughter, and a review of scholarly work on consumerism, advertising and media.

#OI-7

Welfare Reform and Poverty in Wisconsin: The Importance of Education. *Jessica Schroeder and Patricia Wolski (Anne Statham), Department of Sociology-Anthropology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Interviews of 150 women in 13 Wisconsin counties connected with nine University of Wisconsin campuses (River Falls, Stout, Eau Claire, La Crosse, Steven's Point, Rock County, Milwaukee, Madison and Parkside) are analyzed with respect to the impact of education on women's attempts to leave poverty. Many of these women—some of them interviewed three or four times over the two years when Wisconsin's new welfare program, W-2, was being implemented—felt their opportunities to leave poverty were hampered by their lack of access to education. Others persisted in their efforts to obtain more education, and demonstrate the impact this can have on their achievement of self-sufficiency. Quotes are used from the qualitative data to illustrate the critical points.

#OI-8

Chippewa Lumber & Boom Co.: The Economic and Social Impact of a Logging Operation on Chippewa Falls in the Logging Era and Beyond. *Patrick Tracy (Patricia Turner), Department of History, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

After the demise of the fur trade in the early 19th century, the economy of the upper Midwest declined precipitously. In Chippewa Falls, Wisconsin, and throughout the "Great Northwoods," this gap was filled by the logging industry. First established in 1836, the Chippewa Lumber & Boom Co. emerged as the most prominent logging enterprise in the Chippewa Valley and at one time operated the largest sawmill under one roof in the world. Created for the web site of Chippewa Falls Museum of Industry and Technology, this research project examines the logging industry—and the Chippewa Lumber & Boom Co. in particular—in a local context, using articles from the local newspapers, the Chippewa Lumber & Boom Co. archives located at the Minnesota State Historical Society, and various photographs and maps from local archives and the Chippewa Valley Museum. These sources have been used to create an online exhibit that documents the

direct effects of the rise and decline of the logging industry in the Chippewa Valley and the impact that this industry had on the local economy, labor force and agriculture well into the 20th century.

#OI-9

Bioavailable Carbon and Nitrogen in Composting Substrates. *Leon Downing (Philip Parker), Department of Civil and Environmental Engineering, UW Platteville, 1 University Plaza, Platteville, WI 53818*

The hypothesis of this project is that an indicator measurement of *bioavailable* carbon and nitrogen can be used as a design criterion to produce more efficient composting piles. The carbonaceous biochemical oxygen demand (CBOD) and nitrogen biochemical oxygen demand (NBOD) present in a substrate are believed to be indicators of bioavailability of carbon and nitrogen. Typical compost piles are designed based upon the total carbon and total nitrogen present in each substrate. It is believed that basing the mix design on the CBOD:NBOD ratio present in a substrate will produce more effective composting conditions. The oral presentation will discuss the results of several composting batch experiments conducted in spring 2004. Each composting batch consists of one pile of compost with a mix design based upon the total carbon to total nitrogen ratio, and a second pile based upon the CBOD:NBOD ratio. Comparison of the piles to determine which ratio produces the more effective conditions will be based upon volume reduction, volatile solids reduction and odor production. The pile pH, temperature and moisture content will also be analyzed throughout the process to determine how the different mixing ratios affect these important parameters.

#OI-10

Capturing Ovulating Female Sea Lampreys in Pheromone Baited Traps. *Nicholas Johnson (Michael Hansen), Department of Water Resources, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

This study was conducted as an initial step in the development of a trapping technique for sexually mature female sea lampreys (*Petromyzon marinus*). Recent research has demonstrated that spermiating male sea lampreys release a potent sex pheromone that attracts ovulating females. This discovery prompted us to hypothesize that traps baited with spermiating males would capture more ovulating females than empty traps or traps baited with non-spermiating males. Our results showed that traps baited with spermiating males captured 87% of the ovulating females released ($P=0.001$) whereas empty traps and traps baited with non-spermiating males did not capture any ovulating females. We conclude that spermiating male-baited traps may compliment the current practice of integrated sea lamprey management through direct removal of ripe females from spawning grounds.

#OI-11

Prevalence, Histochemistry, and Histopathology of Gregarines (Protozoan) Infecting Wisconsin Odonates (Dragonflies and Damselflies). *Jessica Orlofske and Sarah Orlofske (Steve Taft), College of Natural Resources-Wildlife Department, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

Odonates (Dragonflies and Damselflies) were collected at four wetland areas in southeastern Milwaukee County, Wisconsin, (Sec. 28, R22E, T5N) and surveyed for protozoan parasites: Gregarines (*Apicomplexa: Eugregarinorida: Actinocephalidae*). Eastern Forktail (*Ischnura verticalis*; 67/159), River Bluet (*Enallagma anna*; 16/26), Common Whitetail (*Libellula lydia*; 4/13), and the Blue Dasher (*Pachydiplax longipennis*; 1/2) were infected. Two species, Eastern Forktails and River Bluets, had the highest rates of infection. Some Gregarines were removed from the intestines and photographed and/or stained in Semicohn's Carmine and prepared as whole mounts. Other Gregarines were fixed *in situ* to study histopathology and histochemistry of this complex host/parasite relationship. Five staining procedures were employed that examined concentrations of polysaccharides, acid mucopolysaccharides, proteins and peptides, and also general morphological characteristics. Four of the five stains were effective in characterizing the host parasite relationship. During the second year of the study nymphal odonates were collected, in addition to adult insects, to determine the prevalence of parasite infection in the aquatic stages.

#OI-12

The Manipulation of Fashion Research in a Costume Design. *Samantha Fromm (Susan Gingrasso), Department of Theatre and Dance, UW Stevens Point, 1800 Portage St., Stevens Point, WI 54481*

Costume designs for a theatrical production typically originate from fashion research of a particular time period. The research incorporates diverse sources including photos, vintage garments, catalogues, sketches and clothing patterns from the time period, web pages, books and previous productions. However, the director's vision of the production, the need for mobility or comfort on the actor's behalf, or limitations such as time, finances or availability of supplies may drastically alter the way the research is utilized and, as a result, the final design. This manipulation of research is a common occurrence in the costume design process. My intent was to document this process as I developed the costume design for UW Stevens Point's production of *Cabaret*, which ran from November 14 to 22, 2003. The action within *Cabaret* occurs during the years of 1930 and 1931 in Berlin, Germany, which determines the type of research required to complete the design. Through this project I will address problems and obstacles that require research manipulation, offer solutions, and document the entire process from original research to opening night. Research, manipulation of the research and the final designs have been completed. The end result of this process was the costumes that appeared on stage.

#OI-13

The Will to Power as Music: Past, Present and Future. *Justin Schell (Mitchell Brauner), Peck School of the Arts, UW Milwaukee, P.O. Box 413, Milwaukee, WI 53201*

This paper examines the views on music by Friedrich Nietzsche (1844-1900) from the standpoint of his concept "the will to power." In works such as *Beyond Good and Evil*, *Ecce Homo*, *The Genealogy of Morals* and *The Case of Wagner*, Nietzsche views periods of music history as exuding great or lesser amounts of "will to power." While one cannot escape the aspect of

Wagner and Wagnerism, I depart from some other work done on Nietzsche and music by choosing to use his views of Wagner as only a part of the total spectrum of Nietzsche's musical ideas. After examining his ideas in the context of the music historical continuum, I posit some ideas on how Nietzsche would have reacted to some of the music of the 20th century (had he lived on), specifically the "Second Viennese School" of Arnold Schoenberg, Anton Webern and Alban Berg. Finally, I will reflect on the unexpected turn toward conservatism that can be gleaned from Nietzsche's views on music and subsequent reverberations throughout the other works of Nietzsche, specifically *Ecce Homo*.

Oral Session II

Rooms 213, 214, 215, 220, 221
10:30 a.m. to noon

Abstracts

** abstracts have been edited only for consistency of style*

#OII-1

The Cost of European Union Expansion. *Justin Fleming (Martina Lindseth), Department of Foreign Languages, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

The current European Union (EU) of 15 members is preparing for the largest, most important, and most diverse expansion in its history. The objective of this research is to investigate the implications of allowing additional members into the EU. This expansion, which will include countries such as Slovakia, Poland, Estonia and Cypress, will add about 30% more people and up to 12 new official languages to the EU, yet will have a minimal impact on the Gross Domestic Product (GDP) of the EU. This research follows from earlier research, which looked into the present problems of the EU translation services and the financial problems that adding another nine to 12 languages will create. In addition to the language component, an objective view of the political, commercial, economic and cultural gains and costs of the EU expansion will be studied, and the future of the European Union will be addressed.

#OII-2

Total Value Shipments Across the Nation. *Laurie Turtenwald (Marianne Johnson), Department of Economics, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

The manufacturing performed in each state is directly linked to employment, investment and tax revenues. One way of measuring the manufacturing health of a state is by looking at the total value of shipments (TVS). This study investigates the sources of differences in TVS across states. Using data collected from three sources—*Annual Survey of Manufacturers*, *Statistical Abstract of the United States*, and *United States Summary of Social and Economic Characteristics*—I estimate how TVS varies according to the number of manufacturing jobs, the number of manufacturing establishments, the geographic region, average materials cost, total hours worked and average annual salary per employee. Using multiple regression analysis, I found that the number of jobs and manufacturing sites were both positively and significantly related to TVS ($p < 0.05$), as were hours worked and average salary. The most surprising result was that total cost measures were strongly associated with higher TVS. This analysis suggests that states wanting to increase manufacturing—identified by the TVS—should consider policies such as incentives for firm relocation and that firms should not necessarily be discouraged from locating in high-cost states.

#OII-3

Computation of the Non-commutative A-polynomial of the Figure-Eight Knot. *Michael Kreeger (Wally LoFaro), Department of Mathematics and Computing, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

What is a knot? As kids, we learned to tie our shoes and identified the twisting and interlocking of shoestring as a knot. From a mathematician's perspective, the definition of a knot has not changed all that much: glue the ends of the shoelaces together and you have a knot. Mathematicians seek to classify all the different types of knots. In order to do this, it is important to know when two knots are the same or different. This leads to one of the most important problems in Knot Theory: "How do we know if two knots are different (or likewise the same)? In the last 20 years, there have been many techniques found that usually allow us to tell different knots apart. These techniques work by identifying invariants of the knot. An invariant, in this context, is a knot characteristic that doesn't change no matter how we pull, stretch or twist the string. Unfortunately, none of these techniques have been proven completely satisfactory. In my

research, I have explored one of the newer knot invariants. The complexity of computing it is daunting, so I have developed a computer program to compute it. The program that I have written has been applied to a few small knots with success. Currently, I am computing the invariant of the figure-eight knot. This has never been done.

#OII-4

The Cenotaph for Issac Newton: A Typical, Not Atypical Neoclassical Building. *Andrew Williams (Nisha Fernando), Division of Interior Architecture, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

This research paper features the Cenotaph for Isaac Newton, an unbuilt monument by the 18th century visionary French architect Etienne Louis Boullée. Conceived in 1784, the design appears revolutionary for its time and is typically regarded as “visionary, utopian” architecture. However, the research emphasizes that the design is representative of French Neoclassical architecture. The Cenotaph design is an exercise in circles: a 400-foot high dome is set in three concentric levels ringed with cypress trees. Two domes of unequal size are placed on top of one another: the bottom dome is several times larger than the top dome. The interior space is empty except for a vacant tomb memorializing Isaac Newton. Interior lighting is provided by holes in the dome that make the illusion of constellations. The building could not have been constructed in its time and would indeed be difficult to build even today due to its shape. Although the design appears to be ahead of its time, the research analysis shows that the architectural style bears characteristics of the Neoclassical Period. Sphinxes guard the doorway, a dentil band encircles the upper ring, cypress trees cover the levels, as well as several other stylistic features.

#OII-5

Maintaining Cultural Identity Over Time in an Italian-American Family. *Lisa Fabiano (Wendy Leeds-Hurwitz), Department of Communication, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

The focus of my research is examining the differences that bicultural children face growing up with two diverse cultures, and how they learn to assimilate into the mainstream, while holding on to their parents’ immigrant culture. Specifically, I will document my Italian parents’ efforts to maintain their cultural identity and pass it on to my brothers and me. I will document my own experience of how my family has conveyed their beliefs and values through language, food, clothing and rituals. I intend to explore which cultural aspects I have adapted as part of my own identity and which I have chosen to exclude. Through observation and interviews, as well as research into the larger context of Italian Americans in the United States, I will attempt to gain a better understanding of my own family’s choices in the practice and display of our cultural identity through inheritance, communication and tradition.

#OII-6

Women and Anorexia Nervosa: Communication with Friends and Family and Sensemaking the Contributing Factors. *Sara Norton (Ronda Knox), Department of Communication Studies, UW La Crosse, 1725 State St., La Crosse, WI 54601*

Much of the previous research on anorexia nervosa has dealt with random samples of women and how the media has influenced their self-perception. A downfall to this type of research is that the factors are predetermined by the researcher, and the sample is not specific to women with

anorexia nervosa. There have not been many qualitative studies conducted in which women with anorexia are interviewed in order to see what they attribute to be the contributing factors to the onset of their illness. Also, previous research has failed to seek out the types of communication that are being used between women with anorexia and their surrounding support systems. This study will not only look to uncover how women who have had anorexia make sense of the factors that led to the onset of their eating disorder, but it will also seek to uncover the communication strategies women with anorexia desire their support systems to use in order to help them more effectively deal with and overcome their eating disorder. One-on-one interviews will be conducted with women who have had anorexia, and a constant comparative analysis will be used to analyze the themes that emerge about communication and anorexia nervosa.

#OII-7

Who is a Friend? Social Markers of Friendships and Friendly Relationships. *Alicia Piotrowski (Wendy Leeds-Hurwitz), Department of Communication, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

“Friend” is an ambiguous term, hard to define because it is used to describe so many different types of relationships. Often each speaker has a slightly different meaning for it. The concept of friendship and ideas surrounding it are difficult to observe because of this ambiguity. It is important, however, to explore and examine the use of friendship and the social markers of friendship as it is demonstrated in a relationship in order to better understand the term’s usage. Friendship will only become less ambiguous if it is examined and studied. After examining and comparing a roommate/roommate relationship to a floormate/floormate relationship in a college context, several key relationship markers demonstrating friendship stand out. Friendship is developed over time and can be easy or hard to obtain. This research revealed several steps that must be completed before a true friendship can be formed. The difficulty is not whether people value friendships, but rather in determining whether any specific pair has a friendship or merely what can be termed a “friendly relationship.”

#OII-8

Perceptions on the Success of Community Policing: A Follow-Up. *Akela Brown, Linda Pulice, Angie Siemers, LaTarah Turner and Michael Vollmer (O. Oko Elechi and Helen Rosenberg), Departments of Criminal Justice and Sociology/Anthropology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

This project assesses the opinions of people in households near community policing field stations in Racine, Wisconsin, and examines the impact of community policing on the people served by this program. In this study, students will conduct interviews with a sample of residents and their responses will be compared with residents who responded to the same questions in 1996 when community policing was first initiated in Racine. We will answer the question, “Has community policing helped Racine?”

#OII-9

Estimates of the Effects of Negative Risky Behavior on Returns to Education. *Caleb Dahl (Marianne Johnson), Department of Economics, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

This paper examines whether the labor market payoff to a year spent in school varies with an individual's decision to drink excessively, use drugs, smoke heavily, or commit a crime while in school, controlling for other factors. Using data from the Bureau of Labor Statistics' National Longitudinal Survey of Youth 1979 and 1995, I estimate how those negative, risky behaviors affect a person's returns-to-education, which are measured as the change in wage rates associated with an additional year of education. This is accomplished with a two-stage procedure. In the first stage, I modify the traditional labor economics models used to examine returns-to-education and the effects of family background and school quality to include the negative, risky behaviors and their interaction terms with education. Using this model and OLS techniques, I estimate the effects of those behaviors at three separate samples at three levels of riskiness. In each of the samples, the results show that an individual's choice to participate in those behaviors is not significantly correlated to his or her returns-to-education. The second stage of the procedure relates to testing the results to see if there is bias created by the respondents who stop answering the survey over the years. Using probit analysis, I estimate that there is no bias due to gender, but there could be some created by a person's race since it was more likely that if the person was a minority he or she would be missing from the sample.

#OII-10

Employee Fraud in Not-for-profit Organizations. *Jessica Evans, Dustin LaValley and Ephraim Tomlanovich (Gregory Trudeau), Department of Business and Economics, UW Superior, P.O. Box 2000, Superior, WI 54880*

Not-for-profit organizations lose an estimated \$10 billion per year as a result of undetected employee fraud. Of that \$10 billion, only \$1.28 billion are actually detected. This huge potential loss should create a sense of urgency in evaluating not-for-profit organizations' internal controls and their boards' responsibilities. Weaknesses range from lack of segregation of duties, transaction authorization, minimal accounting knowledge, and proper chain of command. Many not-for-profits do not have the proper understanding of what the board is liable for nor their specific responsibilities. In relation to the Center Against Sexually Domestic Abuse (CASDA), this case identifies with the previously mentioned fraud susceptibility. As a result of that, Sarbanes-Oxley will have a direct effect on not-for-profits in future years to come.

#OII-11

Comparing and Contrasting OT Treatment of MS in the U.S. and Scotland. *Grace Ott and Bethany Richardson (Robin McCannon), Department of Health Professions, UW La Crosse, 1725 State St., La Crosse, WI 54601*

There currently is very limited occupational therapy treatment options reported in the literature for Multiple Sclerosis (MS). This is a potential problem for the OT profession, as analytical review of current literature is necessary to determine best practice for clients. The purpose of this study was to determine current OT treatment techniques for MS by comparing and contrasting current OT practices utilized by OTs in the U.S. and Scotland. Five occupational therapists in Wisconsin and five occupational therapists in Scotland participated in this study. Researchers utilized in-depth interviews and observation of treatment sessions to develop an understanding of

current occupational therapy practice. Results have been categorized into themes of similarities and differences in treating MS clients between the two countries. Preliminary results have found that the level of care and length of treatment differ due to the sources of funding and government systems of health care. These findings were then generated into recommendations for OTs in both countries to consider when developing treatment plans for their MS clients.

#OII-12

Performance of Typical Children on the Sensorimotor Performance Analysis (SPA). *Jennifer Vida and Polly Sosalla (Deborah Dougherty-Harris), Department of Occupational Therapy, UW La Crosse, 1725 State St., La Crosse, WI 54601*

The SPA is a criterion-referenced tool that assesses components of postural responses that support movement and balance in children. Its lack of normative data has been criticized (Clary-Trimmm, 1990). The initial purpose of this study was to collect preliminary normative data on SPA performance in children. Researchers were trained in SPA administration and scoring criteria to increase rater reliability, then 173 subjects ages 3 to 10 were tested. SPSS was used to obtain means and standard deviations for each gender in each age group. Because studies in motor control suggest that there are slower and more variable postural responses in the pre-school age group (Shumway-Cook & Woollacott, 1985), a related question was asked: Would the SPA reflect this variability through lower, more variable scores in the pre-school age group as compared to the elementary age group? Preliminary results through the examination of the standard deviations show higher, more consistent scores for the older children in *some* sections of the assessment. Present analyses using further tests of variation are underway. This work paves the way for future studies for the improvement of the assessment, and it will also provide supplemental information for local therapists when using the SPA to evaluate movement in children.

#OII-13

Research and Design Project for Housing Elderly with Dementia. *Kara Vosters (Nisha Fernando), Division of Interior Architecture, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

Housing the nation's elderly population has recently become a concern. This design project is based on a community residential facility for the elderly with dementia. In an undergraduate interior architecture studio, I undertook the problem of designing the interior for a residential facility with elderly dementia residents. First I conducted a detailed archival research and collected information on spatial aspects and way-finding problems related to dementia. Then, from a field trip to a local elderly facility, I gathered more information about various spaces, circulation patterns and community lifestyle. Several design concepts were derived to resolve the design problems. Concepts included easy way finding, well-lit spaces, personalization of spaces, spacious common areas and nature-related features. Applying these concepts, I designed the interior of a multi-story facility, including common areas on the first floor and bedrooms on the corresponding floors. This design accommodates for the resident's memory loss, homeliness and directional unawareness. In the presentation I will provide the specific details of the design that correspond to the typical stages of dementia patients.

Oral Session III

*Rooms 213, 214, 215, 220, 221
2:00 to 3:30 p.m.*

Abstracts

** abstracts have been edited only for consistency of style*

#OIII-1

Is There a January Effect? A Cross-Sectional Look at Stock Returns. *Cliff Moll (Kevin McGee), Department of Economics, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Innumerable studies have been conducted that try to explain and predict stock returns. The reason for all of this research is simple: the potential for a huge payoff. In this paper, I examine the correlative relationships between numerous financial and nonfinancial variables and stock returns. Of particular interest to this study is the possibility of a “January Effect.” If observed, a January Effect would provide evidence of above-average returns in the month of January. This phenomenon is believed to be the result of particular tax laws, which influence the sale and purchase of stocks in the months of December and January. Data for this analysis were gathered using COMPUSTAT, a financial information database. More than 1,500 firms were included in the analysis. Ordinary Least Squares regression techniques were used to determine the sign and magnitude of a January Effect. The most significant variables of the study were price/earnings ratio, the beta measure, and the firm’s Standard Industrial Code (SIC) designation ($p < 0.01$). Limited support was found for a January Effect ($p < 0.01$).

#OIII-2

An Empirical Study into Lobbying of Nonprofit Firms Within the U.S. Economy. *Robert Post (Marianne Johnson), Department of Economics, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

We examine political and public lobbying decisions in the nonprofit sector. Nonprofits lobby to advance their charitable agenda, environmental or political reform, or changes in laws or policy. We examine which nonprofits choose to lobby and how much they choose to spend. Data from nonprofit tax returns, provided by the IRS Statistics of Income Division, is analyzed with multiple regression techniques. Using Logit and Ordinary Least Squares regression analysis, the factors influencing both the decision to lobby and the amount of lobbying were examined. Lobbying is divided into two categories: legislative lobbying and public lobbying, both of which are examined separately. Size of the nonprofit, net wealth and value of donations all contribute to the likelihood that a nonprofit will engage in both types of lobbying ($p < 0.01$), though nonprofits that rely on donations are more likely to focus on public lobbying. Looking at the total amount of lobbying spending, this study identifies a non-linear relationship between the amount of assets a company holds and the amount it will spend on legislative lobbying. This suggests that the largest nonprofits do most of the lobbying.

#OIII-3

The Development of Occupational Therapy Students’ Cultural Competency Following a Targeted Classroom Experience. *Katie Jones, Jessica McDonough and Janelle Wallace (Robin McCannon), Occupational Therapy Department, UW La Crosse, 1725 State St., 4034 HSC, La Crosse, WI 54601*

Cultural competency has become a significant issue over the past decade in health care. In response to the increased need for health care practitioners to provide services to diverse populations, many occupational therapy educational programs have begun to address this within the curriculum. The purpose of this study is to evaluate the effectiveness of a targeted classroom experience designed to increase cultural awareness on the development of cultural competence in occupational therapy students following their educational training, which included didactic

coursework and fieldwork opportunities. A total of 30 occupational therapy students from UW La Crosse and Robert Gordon University of Aberdeen, Scotland, have participated in a 14-hour joint problem-based learning course delivered via videoconferencing. Students completed surveys and participated in focus groups regarding their cultural experiences during their fieldwork. The focus groups and surveys were analyzed and common themes were identified by the researchers regarding the success of the problem-based learning experience on the development of cultural competency.

#OIII-4

An Exploration of Therapeutic Recreation in Adult Federal and State Correctional Facilities. *Lisa Olson (Patricia Ardivino), Department of Recreation Management and Therapeutic Recreation, UW La Crosse, 1725 State St., Wittich Hall, La Crosse, WI 54601*

Therapeutic recreation services in correctional facilities are designed to meet the needs of individuals with a variety of disabilities, impairments or illnesses by providing specific services such as recreational activities, leisure education and skills training. Therapeutic recreation services address the ultimate goal of preparing the inmate to re-enter society by focusing on the acquisition of appropriate life skills. Currently, a directory of therapeutic recreation specialists working in adult correctional facilities does not exist. This makes it challenging for students and professionals to network and obtain valuable information regarding trends and issues. A descriptive survey requesting information pertaining to personal demographics, facility and unit statistics was sent to 10 therapeutic recreation specialists at six federal medical centers in the United States and to correctional and forensic institutions in Wisconsin. It is hoped that information obtained from this survey will (1) begin the process of establishing a directory of therapeutic recreation professionals in correctional facilities and (2) provide insight into the services currently being provided.

#OIII-5

Anti-virus Technology. *Farah Ali (Thomas Hilton), Department of Management Information Systems, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Computer viruses evolved from an academic curiosity to a persistent problem and are now being written for almost every computing platform. They have become a costly threat to the security of computer systems worldwide. A computer virus is software that copies itself from computer to computer and then does some kind of damage. Computer users must understand how to protect against viruses. This study investigated the state of the art in anti-virus measures. The research consisted of finding, evaluating and integrating a wide variety of sources of anti-virus information and technology into one cohesive resource for computer users. Windows®-based systems were emphasized, but the information applies to other operating systems as well. The paper will be a chapter in *The Internet Encyclopedia*, edited by Dr. Hossein Bidgoli of California State University at Bakersfield, to be published by John Wiley & Sons. Dr. Hilton and Ms. Ali are co-authors. The paper presents current information about the different types of viruses and methods to control them. The presentation will summarize anti-virus measures from the paper. Audience members will thus be better equipped to use their computing resources safely and effectively.

#OIII-6

Using Algorithm Visualization to Improve Students' Understanding of Parameter Passing Methods. *Jessica Gowey and Orjola Kajo (Thomas Naps), Computer Science Department, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Some of the most difficult concepts for students to master in a junior-senior level course on programming languages involve the differences between parameter-passing methods, such as by-reference, copy-restore, by-name and macro processing. *Algorithm visualization* (referred to as *AV*) uses computer graphics to depict the actions of an algorithm. In this project, our work in *AV* is used as a tool to help students understand these parameter-passing methods more easily and in greater depth. We have developed a program that creates a random instance of a parameter-passing problem and then solves it by using either by-reference and copy-restore or by-name and macro processing methods. The solution to the problem is hidden with the purpose of being unveiled by the student. The visualization of the solution is presented to the student as a sequence of snapshots supplemented with interactive questions that force the student to predict what will happen next and find a solution. Our goal is to statistically test the following hypothesis: "Students who use *AV* learn parameter-passing significantly better than students who use no visualization." This stage of the project will be completed by May 2004.

#OIII-7

Information System for a Volunteer Center: System Design for Not-for-profit Organizations with Limited Resources. *Jeffery Michaels (Suresh Chalasani), Department of Business, School of Business and Technology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

This presentation focuses on information systems required for not-for-profit volunteer-based organizations. Specifically, we discuss an information system project for the Volunteer Center of Racine (VCR). This talk will discuss analysis and design of information systems for VCR using the UML methodology, database design, and aspects of project management including scope and risk management. For the analysis and design phase, we present detailed use cases, sequence diagrams, and the hardware/software requirements. In addition, we present a detailed Entity Relationship Diagram that depicts the database needs for the VCR system. Finally, we will discuss the factors that affected the project scope, and how the scope/risk of the project was managed.

#OIII-8

UWS Handicapped Access Project. *Steve Hagedorn, Genelle Lamont and Zakary Thumbi (William Bajjali), Department of Biology and Earth Science, UW Superior, P.O. Box 2000, Superior, WI 54880*

The objective of the project was to create a map of handicapped access points on the UW Superior campus. This included vehicle parking, ramps and building door access locations. The map would also have streets, sidewalks, parking lots, athletic fields and campus buildings as a guide to locate the handicapped access points. Raw data sources were CAD drawings, aerial photos and manually derived digitized points using the ArcPad GPS software. This raw data was implemented into a GIS map using a combination of projection and editing techniques. In particular, the CAD drawing coordinates and GPS derived points were converted into the Douglas County Mercator Projection. This projection uses the Universe Transverse Mercator coordinate system. Extensive editing of the CAD drawing data was needed due to the age of the drawings.

Final map verification was done from the aerial photos, field checks and coordination with other staff. Through the graphical representation of the handicapped access points and facilities, the map created serves as an aid to handicapped individuals attending and visiting the UWS campus. In addition, there are future plans to use this map for other UWS facilities mapping purposes.

#OIII-9

A Stroll Through Geologic Time at Amnicon Falls. *Emily Loomis and David Lamont (William Bajjali), Department of Biology and Earth Science, UW Superior, P.O. Box 2000, Superior, WI 54880*

The focus of our study at Amnicon Falls State Park is to create a geographical information system (GIS) model that represents a path of geologic features at the state park. The geologic features of major focus were the Douglas Fault, glacial striations, active potholes, glacial erratics, and various metamorphic and sedimentary rocks. The GIS system was used to incorporate an aerial photograph and data points to create the path of travel taken. Photographs of the points of interest along the path were incorporated using hot linking technology. An analysis of the data was to inform others about the present geological appearance of the park.

#OIII-10

AY9944 Dose-Response on Retinal Structure, Function, and Sterol Composition in an Adult Rat Model of Smith-Lemli-Opitz Syndrome. *Angela Rodriguez (Dana Vaughan), Department of Biology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Smith-Lemli-Opitz Syndrome (SLOS) is a congenital disease that causes insufficient cholesterol and excessive 7-dehydrocholesterol in all bodily tissues. Many symptoms are present at birth, and it's now known that SLOS children are slowly blinded by the condition, as well. An animal model for congenital SLOS was created by giving the cholesterol inhibitor AY9944 to pregnant rats; AY9944 treatment continued in the cholesterol-deficient pups after their birth. Just as in children, progressive blindness was observed in the juvenile AY9944 rats, suggesting important (but unknown) roles for cholesterol in development of the vision system. In the present study, normal adult rats were administered AY9944 to evaluate the role of cholesterol in the ongoing function of the adult retina. AY9944 treatments included .37 mg/kg/day for 6 weeks; .37 mg/kg/day for 12 weeks; and 2.5 mg/kg/day for 12 weeks. Control rats received no AY9944. Key anatomical measurements of the rat retinas were made in a large number of samples using a light microscope. Statistics were applied to the data. The same sort of progressive blindness seen in the AY9944 juveniles was also observed in the AY9944 adults, suggesting important (but unknown) roles for cholesterol in maintenance of the adult vision system, too.

#OIII-11

Ecological Evaluation of Superior School Forest. *Laura Bosak, Paul Schueller and Josh Zika (Mary Balcer and William Bajjali), Department of Biology and Earth Sciences, UW Superior, P.O. Box 2000, Superior, WI 54880*

The focus of our study was to make an ecological assessment of the plant community of a forest in Douglas County, Wisconsin. The forest that we studied is a second growth forest that has not been logged in several years. Our study began by going into the field and marking the locations of trees using a GPS unit. Measurements of foliage and basal area were taken and recorded for each of these trees. These measurements were used for further calculations for determining importance

values relating to the entire population of the forest. Through statistical analysis we determined the ecological importance of each species present; these values included relative density, relative frequency, relative basal area, relative foliage area and importance value. We also used regressions to see if there were any correlations within each species and the community as a whole. Using a GIS environment, we were able to spatially analyze this data and create a visual representation of our findings. Through our study we were able to find information regarding the health and diversity of the forest community.

#OIII-12

Relationships Between Macrophyte Density and Adult Insect Emergence in an Urban Marsh Ecosystem. *Jacob Ogorek (Roger Haro), Department of Biology, 4028 Cowley Hall, UW La Crosse, 1725 State St., La Crosse, WI 54601*

Myrick Marsh is an urban wetland in La Crosse, Wisconsin. Most of the marsh's watershed is under increasing developmental pressure from urban growth. Unfortunately the ecological status of the marsh, especially the structure of its macroinvertebrate community, is poorly understood. The seasonal emergence of adult insects from the marsh represents an important flux of energy to animals both in and out of the water including amphibians, fish, birds and bats. Recent surveys found the caddisfly *Leptocerous americanas* (Trichoptera: Leptoceridae) to be abundant in the marsh. *Leptocerous americanas* larvae are strongly associated with the submerged macrophyte, *Ceratophyllum demersum*. Larvae use *C. demersum* as habitat until they emerge as adults in late spring. The distribution of *C. demersum* in Myrick Marsh, however, is extremely patchy. This study developed a mathematical relationship between *Ceratophyllum* density and the rate of emergence of adult *L. americanas*. To measure insect emergence, 25 floating traps were deployed across a gradient of *C. demersum* density. Samples were collected daily for 37 days. A total of 21,000 insects were collected. *Leptocerous americanas* comprised 43% of the total emergence. Emergence rates were directly related to water depth, aquatic vegetation density and estimates of *C. demersum* standing crop.

#OIII-13

A Study of Dragonflies in Empire Bog, Empire Wilderness Area, Douglas County, Wisconsin. *Julie Pleski (William Bajjali), Department of Biology and Earth Science, UW Superior, P.O. Box 2000, Superior, WI 54880; and Robert DuBois, Bureau of Integrated Science Services, Wisconsin Department of Natural Resources*

In choosing this bog, data were needed about the emergence timing, habitats and flight seasons of the rare emerald dragonflies in bogs. In 2003, an exuviae survey was conducted every-other day from late May to mid June, then randomly from mid June to mid August. The sites, where exuviae were found, were flagged and numbered. Most exuviae were collected and identified. Identified to either species or genus level, some exuviae were left to see how long they persist in nature. GIS was used to create a map of the bog with the flags' coordinates, assigned by a GPS receiver. The exuviae were found mostly around the bog's edges, in moat-like conditions. *W. fletcheri* (119 exuviae) was the first species to emerge starting on May 27 and continuing to June 13, mostly on shaded east and southeast edges. *Somatochlora franklini* (16 exuviae) emerged from June 2 to June 16, mostly in open areas along the south edge. *Somatochlora kennedyi* (14 exuviae) emerged from June 2 to June 16, mostly along the shaded east edge. One adult female *Leucorrhinia hudsonica* was collected with eggs on June 4. *Libellula quadrimaculata* (8 exuviae) were collected from June 13 to July 21. One *Aeshna verticalis* exuviae was collected on July 2, on the east edge. Seven *Sympetrum obtrusum* exuviae were collected from July 14 to August 12.

The Empire Bog is a breeding site for *W. fletcheri*, *S. franklini*, *S. kennedyi*, *S. obtrusum*, and *L. quadrimaculata*. Some evidence suggests that the *A. verticalis* and *L. hudsonica* may breed there. The exuviae persisted from five days to nine weeks. Further studies would be helpful to determine if any more species occur at the Empire Bog, along with surveys of other bogs. This information could help the DNR manage bogs more effectively given that potential threats to bog habitats like global warming and commercial mowing could significantly impact these bog habitats in the future.

Poster Session I

*Rooms 201-202
10:30 a.m. to noon*

Abstracts

** abstracts have been edited only for consistency of style*

#PI-1

Purification and Characterization of *Pyrococcus furiosus* DNA Polymerase: Modular Experiments for Biotechnology Laboratory. Paul Brantmier (Toivo Kallas), Department of Biology and Microbiology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901

The hyperthermophilic archaeobacterium *Pyrococcus furiosus* grows near deep-sea vents at an optimal temperature of 100°C. The *P. furiosus* (*Pfu*) DNA polymerase (an enzyme that synthesizes DNA) shows remarkable heat tolerance and replication fidelity. These features make *Pfu* DNA polymerase attractive for DNA amplification by the polymerase chain reaction (PCR) method and for comparative studies in biotechnology or molecular biology laboratory courses. In a biotechnology class and a subsequent student research project, we purified a large quantity of this valuable enzyme from an over-producing bacterium and performed biochemical studies to characterize the enzyme. These studies can be performed in series or independently as modular exercises. These modules include: 1) polymerase expression and purification, 2) characterization of reaction conditions, 3) comparison of elongation rates against *Thermus aquaticus* DNA polymerase, 4) expression plasmid characterization by restriction analysis, and 5) gene-specific primer design and PCR amplification. These modules were devised to be flexible and open-ended and should lend themselves well for use in inquiry-based laboratory classes.

#PI-2

Scanning Electron Microscopy of Spore Walls of Arbuscular Mycorrhizal Fungi. Nathan Kleczewski (Stephen Bentivenga), Department of Biology and Microbiology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901; and Sonia Purin, Centro de Ciências Agro-Veterinárias Universidade do Estado de Santa Catarina Lages - SC Brasil

Spore wall characteristics are important determinants in the taxonomy and systematics of arbuscular mycorrhizal fungi. Interpretation of these characters is largely based on light microscopy and transmission electron microscopy. Scanning electron microscopes have been used to study the surface ornamentation of spores, but not wall structure itself. We have developed two simple techniques for observing crushed spores, providing new observations of the various layers of the spore wall and inner walls. Images of fungi from the genera *Acaulospora*, *Entrophospora*, *Gigaspora*, *Glomus*, and *Scutellospora* will be presented, and the results will be compared with observations at the light microscope level. Our observations will help to solidify interpretations of spore wall structure and may be useful in phylogenetic analyses based on morphological characters.

#PI-3

Energetics of Lead and Saccharide Reactions. Laura Miller (Jennifer Mihalick), Department of Chemistry, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901

A cyanobacterium naturally occurring in Lake Winnebago, *Microcystis flos-aquae* C3-40, was found to accumulate large amounts of heavy metal ions. This property makes it a candidate for one day cleaning up toxic waste sites. A polysaccharide capsule isolated from the cyanobacterium has been shown to be responsible for binding the metals. This capsule is composed of several saccharides, primarily galacturonate. In order to see if the cyanobacterium is a possible solution to clean up waste sites, the saccharides that compose the cyanobacterium were investigated with a microcalorimeter to attempt to understand and gather information on the binding properties of the cyanobacterium with lead.

#PI-4

Distribution, Composition and Paleocology of Middle Triassic Carbonate Reefs of the Nanpanjiang Basin, Guizhou, Guangxi, and Yunnan, South China. *Shannon Christensen (Dan Lehrmann), Department of Geology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

The Nanpanjiang Basin occurs in the southern margin of the Yangtze microplate. Middle Triassic reefs rim the basin along the Yangtze Platform (YP) and in isolated platforms (IP). Anisian reefs of IP consist of delicate *Tubiphytes* framestone-cementstone generally containing little framework (~ 10%) and large volumes of microbial crusts and marine cement (up to 90%). Anisian reefs of YP have greater diversity with the addition of minor scleractinian corals, sphinctozoan sponges, bryozoans and serpulids. Ladinian reefs of the YP and northernmost IP have greater biodiversity and more complex paleoecologic structure with 2-3 frame builders on a local scale, and contain lesser volumes of marine cement. Frame participants include solenoporacean algae, sphinctozoans, corals, *Tubiphytes* and bryozoans. When *Tubiphytes* is not the primary frame it takes on a binding role. Additional encrusters include microbial crusts, serpulids, *Bacinella*, *Ladinella*, foraminifera and bryozoa. Dwelling organisms are similar to those found in the Anisian reefs. *Tubiphytes* reefs of the Nanpanjiang basin began in the Earliest Anisian or in the latest Scythian—substantially earlier than European examples. Middle Triassic reefs of south China developed vast structures and substantial relief in contrast to European counterparts.

#PI-5

A Field and Laboratory Study to Evaluate the Genetic Relationships Between the Purvis Pluton and Volcanic Rocks and Volcanic-Associated Mineralization in the Vermilion District of Northeast Minnesota. *Heidi Drexler (George Hudak), Department of Geology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901; and Dean Peterson, University of Minnesota-Duluth*

Regional mapping in Neoproterozoic subaqueous volcanic rocks within the Vermilion District of northeastern Minnesota has identified a tonalitic to dioritic intrusion called the Purvis Pluton. Detailed field and laboratory studies have been conducted to constrain the age of the intrusion, as well as igneous and hydrothermal processes, which produced base-metal mineralization in the Vermilion District. Detailed mapping indicates that the Purvis Pluton comprises four phases: a) an early, xenolith-rich dioritic phase (xenolithic diorite) that occurs near the top of the intrusion; b) a dioritic phase that lacks abundant xenoliths (diorite); c) a later leucotonalitic/trondhjemitic phase; and d) late, pegmatitic granite or granodiorite dikes. A regional east-west-trending D₂ foliation cross-cuts all these phases, suggesting crystallization dates between 2722 to 2683 my. Two samples are currently undergoing geochronological analysis by U/Pb and Ar/Ar methods. Our lithochemical evaluations indicate that this apparent synvolcanic intrusion shares chemical characteristics with synvolcanic intrusions genetically associated with base-metal massive sulfide deposits in Canada and Scandinavia. Hydrothermal activity in a sub-seafloor environment generated by conductive cooling of the synvolcanic Purvis Pluton is likely responsible for at least one, and possibly several, base-metal massive sulfide occurrences in the Lower Member of the Ely Greenstone Formation.

#PI-6

Oxygen Isotopic Analysis and Petrographic Characteristics of Dolomite from the Proterozoic Sibley Group, Ontario, Canada: Implications for Paleoenvironmental Interpretation. *Nicholas Geboy (Eric Hiatt), Geology Department, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

The Sibley Group (ca 1.7 billion years B.P.) is a series of sedimentary rocks that fill an ancient sedimentary basin located in northwestern Ontario. This sandstone, mudstone and carbonate rock succession represents deposition in a tectonically active ancient desert environment. The carbonate layers are the focus of this study; these dolostones have been interpreted as shallow playa lake to shallow marine deposits. The purpose of this study was to use the oxygen isotopic signature of dolomite to test which paleoenvironmental interpretation is correct. Observed evaporite minerals and preserved feldspar grains suggest that the paleoclimate was indeed arid. Using petrographic microscopy we found individual crystals of dolomite to be complexly zoned suggesting recrystallization. Oxygen isotopic signatures suggest isotopic re-equilibration between ambient groundwater and the dolomite occurred during recrystallization. Our oxygen isotope results are generally 10‰ lower than those predicted for either seawater or playa lake settings. We conclude that the oxygen isotopic signatures from dolomite in the Sibley Group cannot be used as a paleoenvironmental “fingerprint” and do not resolve the debate regarding the origin of these shallow water deposits.

#PI-7

Assessing the Social Impacts of the Polio Epidemic at the Local, Regional and National Level, 1940-1955. *Amanda Boeker and Valerie Brandt (Stephen Kercher), Department of History, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Polio is a viral disease that took a devastating toll on scores of Americans at mid-century. In 1955, northeast Wisconsin faced an epidemic of significant proportions. The polio epidemic changed the general functioning of the communities of northeast Wisconsin in multiple ways. The epidemic altered the government’s role in dealing with medical emergencies and the manner in which it forced medical professionals to cope with a mysterious disease. Significantly, the polio epidemics brought women to the forefront as nurses, mothers, volunteers, fund-raisers and teachers. Examining the role of The National Foundation for Infantile Paralysis provides insight into the social ramifications of the polio epidemic, particularly its effectiveness in garnering support for the polio cause. Questions remain unanswered about the local polio epidemics, particularly how this water-borne disease spread so quickly. Polio is now eradicated from the United States, but many survivors remain. Many are dealing with permanent paralysis or Post Polio Syndrome. While the fear of polio is gone, the painful reminder of its importance to Americans living during the epidemics is not forgotten.

#PI-8

Assessing Levels of Regret in Situations with Adverse Outcomes. *Theresa Bender (Kathleen Stetter), Department of Psychology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Regret is defined as a negative, cognitively based emotion that individuals experience when realizing their present situation would have been better had they acted differently. Previous research on regret has shown that adverse outcomes resulting from action seem to be more regrettable than the same adverse outcome as result of inaction. This study assesses the level of regret felt by college students in four vignettes all with adverse outcomes as a result of action or

inaction to see if the results would coincide with previous research. Participants were presented with four vignettes commonly experienced by college students and asked to rate the level of regret they thought the student in the vignette would feel after making his or her decision. Data were analyzed with a 2 X 4 (Action/Interaction) analysis of variance for repeated measures over vignette. A significant interaction was found with significant action/inaction differences for only one vignette. As hypothesized, college students felt more regret in situations in which action was taken than in situations with the same negative outcome in which action was not taken. Future areas of research relate to thinking about what went wrong when making a bad decision and wanting a better outcome for the future.

#PI-9

Stress and Restriction in the Diets of Rats and the Effects on Binge Eating. *Jennifer King and Brooke Strasser (Kathleen Stetter), Department of Psychology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

Twenty-five Sprague-Dawley rats, five months of age, were tested for stress and binge type eating. The restriction-refeed was done over the course of 11 days. During air-puff stress rats were placed in a 15 x 25.5 cm box. Controls were placed in the box with no stress; low stress and the high were counterbalanced each time they were stressed. Results were analyzed using a 3 x 2 x 4 (Stress Level X Food Type X Time Measure) analysis of variance mixed design with a Scheffé post hoc. Significance was found in start and end weight of the rats, time, food type, and interaction between time and food type at $p < .05$. One of the five hypotheses was supported. The hypothesis supported was that the rats would choose to eat and consume more highly palatable (hp) food than chow. Future research should include a larger number of rats with only a control and high stress group, multiple types of stress, and hp and chow consumption per time of day observation. Like rats, people may eat hp food and tend not to go with a healthy alternative.

#PI-10

Improvements in Heavy Distillate Detection in Arson Analysis Using Solid-Phase Microextraction. *Crystal Hoffmann and Mark Groth (Charles Cornett), Department of Chemistry and Engineering Physics, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Traditional methods for the detection of accelerant residues from arson debris often involve trapping hydrocarbons on a carbon strip followed by carbon disulfide (CS₂) elution and gas chromatography – mass spectrometry (GC-MS) analysis. Solid-phase microextraction (SPME) may provide needed improvements in sensitivity in determination of heavy distillates and aromatic hydrocarbons. SPME also provides benefits such as a more rapid analysis without generation of hazardous solvent waste. This project compares classic methods and SPME using certified ASTM standards and debris samples from simulated arson events. Other specific variables evaluated include length of fiber exposure for absorption, inlet desorption time, memory effects, and SPME fiber lifetime. Preliminary results indicate GC-MS sensitivities are on the order of 10-50 million counts for 1-30 second fiber exposures for C-11 to C-15 compounds with minimal memory effects. Complete results will be presented.

#PI-11

A Rapid Differentiation of Pseudoephedrine and Ephedrine by Stereospecific Derivatization. *Heather Robers, Karen Schmidt, Molly Ross and Crystal Hoffmann (Charles Cornett), Department of Chemistry and Engineering Physics, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Pseudoephedrine and ephedrine are two common starting components in the illicit production of methamphetamine. Crime laboratory analysts have a need for a rapid, effective, and straightforward means of differentiating these two compounds. This presentation provides reaction pathways and analytical parameters related to the analysis of these precursors and subsequent derivatives. Derivatives are formed using a stereospecific derivatization involving N-Methyl-N-(trimethylsilyl) trifluoroacetamide and (S)-(t)-a-methoxy-a-trifluoromethylphenylacetyl chloride. Gas chromatography mass spectrometry data is presented with a discussion of separation efficiency and assessment of the potential this technique has for use in an accredited crime laboratory.

#PI-12

Effects of Stretching and Postactivation Potentiation on Force Capabilities in Athletes. *David Bazett-Jones and Jeffery McBride (Mike McGuigan), Musculoskeletal Research Center (MRC), Department of Exercise and Sports Science, UW La Crosse, 1725 State St., La Crosse, WI 54601*

Warm-up involves different factors and is implemented in multiple fields and applications. In athletics, it is an essential aspect of preparation. Four specific different warm-ups were randomly investigated in this study: stretching, squat potentiation, jump potentiation and control (aerobic/bike). Ten athletes (football and track) were examined over a five-week period with the first week being 1RM testing and familiarization. The stretching protocol (a week later) included the lengthening of the gluteus and quadriceps muscle groups, holding the stretches three times for 30 seconds on each limb. The squat potentiation involved a set of three squats at 90% of their 1RM. One set of nine jump squats with 30% of the subject's 1RM was used for the jump potentiation protocol. The control included a five-minute bike workout (also used prior to every experimental workout). Subjects were tested using an isometric squat on a Quattro Jump (Kistler Instrument Corp.) force plate, measuring maximal force and rate of force development. Our research hypothesis is that the stretching will decrease force while the potentiation will increase force compared to the control. Results from this study help advance the understanding and implementation of warm-up in activity.

#PI-13

Vibrational Frequencies of H₃N-SO₂ and H₃N-SO₃: Implications for Matrix Effects on Structure and Bonding. *Chris Knutson (Jim Phillips), Department of Chemistry, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Previous studies have shown that the structures of amine-SO₂ and SO₃ complexes are quite sensitive to chemical medium. For example, H₃N-SO₃ has an N-S distance of 1.957 Å in the gas phase, but the bond compresses to a value of 1.771 Å in the crystal. Such observations raise the question as to what extent such complexes are affected by a bulk, condensed-phase medium such as solvent, or cryogenic rare gas matrix. In this study, we focus on H₃N-SO₂ and H₃N-SO₃. Vibrational frequencies of these compounds have been observed in both nitrogen and argon matrices, and in the latter case, a crystal structure has been determined and solid-state IR spectra

have been measured. We have reexamined the gas phase properties of these complexes with B3LYP calculations and basis sets ranging from 6-31G* to 6-311+G**. For H₃N-SO₃, comparisons of gas phase, crystal, and matrix vibrational frequencies indicate that the matrix environment does cause a significant contraction of the N-S bond, though not to the extent of the crystalline complex. Similar effects are inferred for H₃N-SO₂, though there are no solid-state data with which to compare. Recent attempts to obtain these data will also be discussed.

#PI-14

Assessment of the Effects of Musical Respiratory Interventions for Patients on Ventilator Support. *Jacquelyn Petroni, Susan Sundly and Sara Ries (Lee Anna Rasar), Department of Allied Health, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Patients on ventilator support who are able to use Passy Muir valves were instructed how to play harmonica and were led in singing exercises daily for two months. A baseline was recorded for each patient to note the number of seconds patient was able to sustain single pitches on harmonica, and to note the number of seconds the patient was able to play harmonica in one breath. Prior to and after each musical intervention, pulse oximetry for each patient was measured, as well as the number of seconds each patient was able to sustain a single pitch on harmonica, both inhaled and exhaled. Harmonica and singing trials occurred daily for four weeks. Adaptations for pre-test and post-test were made for a patient who is blind and has a developmental disability. A harmonica holder was utilized by a patient who is paralyzed from the neck down. Comparisons were made across time to note any changes in the ability of each patient to sustain single pitches on harmonica, in the number of seconds each patient could play in one breath, and in pulse oximetry. Individualized programs for harmonica and singing were developed for each patient based on responses during this project.

#PI-15

Analysis of Artifacts Recovered from the Vieau Fur Trade Post Site, Franksville, Wisconsin. *Cheri Price (Robert Sasso), Department of Sociology/Anthropology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Fur trade posts are rare but important for understanding the nature of cultural interaction between Native American and Euro-American peoples of this region. While a number of these sites are known from Wisconsin, only two have ever been excavated to any great extent here. The Vieau fur trade post site is located in Franksville, Racine County, Wisconsin. Brothers Jacques and Louis Vieau conducted trade with the Potawatomi Indians for several years, until the post was sold in 1837. It was situated adjacent to a sizable Potawatomi village at the place then known as Skunk Grove. Researchers from University of Wisconsin-Parkside have conducted archaeological survey and test excavations at the site during 2002 and 2003. Artifacts now being analyzed include historic Euro-American ceramics, glass, metal, faunal remains and prehistoric lithics. Artifact analysis, identification and dating will contribute to the location of contexts at the site that can be explored to reveal the physical nature of the post, as well as the nature of cultural interaction with the Potawatomi.

#PI-16

Activation of Hemolytic Activity Via Complementation with Truncated Hemolysin A. Luke Peterson (Todd Weaver), Chemistry Department, UW La Crosse, 1725 State St., La Crosse, WI 54601

Proteus species are second only to *Escherichia coli* as the most common causative agent of urinary tract infections and many harbor several virulence factors that provide inherent uropathogenicity. One of the virulence factors is a hemolysin system comprised of hemolysin A and hemolysin B. Briefly, hemolysin B secretes hemolysin A from the periplasmic space where it resides in an inactive state, through the outer membrane into the surrounding extracellular environment. Upon hemolysin B dependent secretion, hemolysin A functions as a hemolysin/cytolysin and disrupts neighboring host cell membranes. In order to describe the mechanism by which hemolysin A is activated for pore formation, we have constructed, expressed, purified and crystallized an amino terminal truncated form, capable of complementing the non-secreted full length hemolysin A and restoring hemolytic activity. The results describe the molecular state, hemolytic activity and crystallographic data of the amino terminal truncated form of hemolysin A.

#PI-17

Do Behaviors Prevent Mating Between Two Adjacent Populations of the Harpacticoid Copepod *Tigriopus californicus*? Heather Buelow and Dennis Peterson (J.R. Strickler), Department of Biological Sciences, UW Milwaukee, P.O. Box 413, Milwaukee, WI 53211

Graduate student Dennis Peterson of the University of Southern California sent two populations of the harpacticoid copepods *Tigriopus californicus*, which live in tidal pools along the coast of California. Animals of these two populations, identified as “Royal Palms” and “Playa Altamia,” show asymmetric reproductive success, hence are compatible in only one reciprocal. The F1 progeny from the compatible reciprocal are unable to produce an F2 generation. Initial results from backcrossing show that neither sex in the F1 hybrids are sterile, thus the failure of the F2 appears to be an intrinsic incompatibility. Peterson hypothesizes that with such a degree of reproductive isolation, animals from the two populations should display behavioral differences such as pre-mating behavioral preferences or observable differences in inter-population crosses. Using video-microscopy, my research examines the behavioral differences between the two populations. For example, the animals are being observed interacting both with their food and with each other, swimming speeds and rhythms are being measured, and encounters are being analyzed both within each population and between the two populations. I am using an encounter probability model to examine the differences in behaviors.

#PI-18

Leaf Blade Anatomy in Andropogoneae: Character Analysis. Barb Combs (Elizabeth Skendzic), Department of Biological Sciences, UW Parkside, 900 Wood Road, Kenosha WI 53141

Leaf anatomical characters have long been recognized as important diagnostic features used to determine systematic relationships at various taxonomic levels. In the grass family, for example, leaf blade anatomy reflects the different photosynthetic pathways that characterize major groups. In this study we have sampled 20 genera and 41 species of the grass tribe Andropogoneae (Poaceae : Panicoideae). Leaf blade samples have been sectioned and stained for light microscopy analysis. Characters analyzed include, among others, shape and structure of keel, number and arrangement of vascular bundles, presence and composition of sclerenchyma as well as

chlorenchyma structure. Based on individual descriptions, characters are scored quantitatively or qualitatively to determine character states, and then arranged in a data matrix. This information will be used, along with DNA sequence information, in the phylogenetic analysis of Andropogoneae.

#PI-19

Identification of 5'→3' Exoribonucleases in *Chlamydomonas reinhardtii*. Michael Fischer (David Higgs), Department of Biological Sciences, UW Parkside, 900 Wood Road, Kenosha, WI 53141

Exoribonucleases (exos) are enzymes in eukaryotic organisms that digest RNA and play essential roles in RNA metabolism. These include processing pre-RNA to mature RNA, regulating RNA abundance, and degrading defective RNA. In the alga *Chlamydomonas reinhardtii*, 5'→3' exo activity exists in the chloroplast though there are not any exo genes in the chloroplast genome. Our previous work has identified several 5'→3' exo genes in *C. reinhardtii*, and one (*CrXrn1*) encodes a protein with a putative chloroplast targeting peptide. By BLAST analysis and searching the sequenced *C. reinhardtii* genome we confirmed the *CrXrn1* gene. Using RT-PCR, the 5' ends of the mRNAs from *CrXrn1* were amplified and sequenced. These data provide evidence for alternative splicing in the first exon of *CrXrn1*. One of the spliced mRNAs (*CrXrn1b*) encodes a 40-amino acid N-terminal extension that is similar to chloroplast targeting peptides. This may target the protein to chloroplasts and perform the reported 5'→3' exo activity. Using less stringent conditions, BLAST analysis of the *C. reinhardtii* genome identified a second *CrXrn2* gene. However, this gene appeared to be split over two sequenced segments. PCR was used to confirm the existence of the full-length *CrXrn2* gene and we are currently analyzing the *CrXrn2*.

#PI-20

The Development of Inflorescences in *Briza minor*: A Study with Scanning Electron Microscopy. Harold Hinds (Elizabeth Skendzic), Department of Biological Sciences, UW Parkside, 900 Wood Road, Kenosha, WI 53141

Scanning electron microscopy was used to characterize inflorescence development in the grass (Poaceae), *Briza minor*. Specimens were grown in the greenhouse and samples were obtained from culm nodes under a dissecting microscope. Chosen for its open panicle (a specific type of inflorescence) that exhibits branching up to the quaternary level, this grass was also easy to dissect, and very productive at almost all nodes. After dissection, samples were fixed with FAA, ethanol dehydrated, critical point dried and then sputter coated for subsequent viewing under the electron microscope at the University of Wisconsin-Milwaukee campus. The resulting micrographs indicated that development proceeded first with branching before any differentiation of floral organs. Also when flower differentiation occurred, it was in "top-down" fashion. Except for the quaternary level, all other levels of branching were observed. We speculate that the last branching takes place later in development and that it can be better explored with light microscopy. This information will be used as a comparison to other types of inflorescence development found in the grass family.

#PI-21

Host-Pathogen Interactions of *Pasteurella multocida*. *Rebecca Watson and Matthew Hundt (Carmel Ruffolo), Department of Biological Sciences, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Pasteurella multocida is a highly virulent Gram-negative bacterium that causes many different diseases in a number of hosts. To study *P. multocida* pathogenesis, a good model system is needed to help identify in-vivo virulence factors involved with the host-pathogen interaction. The amoeba, *Acanthamoeba polyphaga*, was used as a model system in this study. Co-infection assays were performed and provided evidence that the bacteria was able to invade, survive, replicate, and lyse amoebal cells. Thus, the interaction between the amoebae and bacteria can be defined as an infection. To further study *P. multocida* pathogenesis, a mutant library will be created through transposon mutagenesis. The library will be created based on the system currently used for *Actinobacillus*. For a representative library, 8,000 to 10,000 transconjugates need to be generated. The amoebal model will be used in the co-infection assay to identify transconjugates that are unable to infect the amoebae. The defective genes in these impaired transconjugates can then be characterized in order to understand how they relate to pathogenesis. Identification of the specific genes that allow *P. multocida* to interact with and cause disease in a specific host will be most beneficial for vaccine development.

#PI-22

Mapping the Hybrid Incompatibility Gene in *Tribolium castaneum* Using Genetic Markers and SSCP (Single Stranded Conformation Polymorphism). *Ahmed Cheema (M. Scott Thomson), Department of Biology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Tribolium castaneum, the red flour beetle, is a major pest of stored products. Understanding its speciation and reproductive isolation can lead us to develop a better method of pest control. Hybrid incompatibility refers to partial reproductive isolation of different strains of beetles that are unable to produce viable offspring, if any. The phenomenon was observed in crosses between an Indian strain (Tiw-1) and non-Indian strains. It was found out to be dependent on both temperature and cross direction. This trend was associated with a dominant Hybrid incompatibility factor (H-gene), found in the 9th linkage group. Different sets of primers were used to amplify regions in the 9th linkage group. The PCR products were checked for polymorphisms using SSCP. SSCP is a gel mobility shift assay that involves denaturing the PCR products and then running them in a non-denaturing native polyacrylamide gel. The differences in sequences of the PCR products alter the secondary structures of the single stranded DNA, thus providing us with different banding patterns to identify alternative alleles. Allelic frequency was used to calculate relative position of the H-gene.

#PI-23

Cloning and Characterization of Xanthine Dehydrogenase in *Tribolium castaneum*. *Rebekah Costello (M. Scott Thomson), Department of Biology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Tribolium castaneum is the red flour beetle, a common stored food product pest. *T. castaneum* could prove to be a useful model organism for the order Coleoptera. Xanthine Dehydrogenase (XDH) is the product of the *Rosy* gene in *Drosophila melanogaster* responsible for eye color expression. We have theorized that a similar mechanism may be at work in *T. castaneum*. We used BLAST to find conserved amino acid sequences between *D. melanogaster* and *Bombyx mori*

(silkworm). The conserved sequences were used to design degenerate primers for amplification of the corresponding regions in *T. castaneum*. We report here *T. castaneum* sequences obtained and our efforts to genetically link them to known eye color mutations.

#PI-24

Application of Immunoassay Techniques to Address the Question of Retroviral Envelope Protein Immuno-crossreactivity. Emily Genal (Timothy Lyden), Department of Biology, UW River Falls, 410 S. Third St., River Falls, WI 54022

To identify reagents that detect endogenous retroviral proteins in placental trophoblast cells, we are using immunoassays to test the crossreactivity of several anti-retroviral antibodies. Based on our own and other laboratories' observations, a number of available antibodies against exogenous retroviruses also detect proteins in non-infected tissues and placental cells. This is thought to represent antibody cross-reactivity to conserved regions within retroviral proteins and is based on the relatively simple construction and similar function of these proteins in all retroviruses. To experimentally test this concept, we are currently using an ELISA assay to screen a library of anti-HIV-1, MULV and HERV monoclonal antibodies for reactivity to immobilized HIV-1 gp 160. Next we will screen several anti-retroviral sera in the same manner. Finally, we will use a library of peptides covering the entire length of HIV-1 gp 160 to screen positive antibodies and sera. This last approach is called epitope mapping and should identify specific regions that are cross-reactive and presumably the most highly conserved as well. Future studies will use Western blot assays with placental cell extracts and isolated HIV-1 gp 160 to qualify the size of the reactive proteins for each of the positive antibodies.

#PI-25

Genetic Characterization of a Novel *Borrelia burgdorferi* Sensu Lato Isolate from a Black-legged Tick from Kettle Moraine State Forest, Wisconsin. Curtis Johnson (Diane Caporale), Department of Biology, UW Stevens Point, 800 Reserve Street, Stevens Point, WI 54481-3897

Currently, there are 10 species that fall in the Lyme disease-causing *Borrelia burgdorferi* sensu lato complex: *B. burgdorferi* sensu stricto, *B. garinii*, *B. afzelii*, *B. japonica*, *B. andersonii*, *B. valaisiana*, *B. lusitaniae*, *B. tanukii*, *B. turdi* and *B. bissettii*. *B. burgdorferi* sensu lato isolates are genetically and phenotypically different from *B. burgdorferi* sensu stricto. Previously, ticks from the Kettle Moraine State Forest, Wisconsin, were tested for *B. burgdorferi* by sequencing the *OspB* gene. One isolate (W97F51) contained 56 mutations in a 420bp fragment. To determine whether a new *B. burgdorferi* species was found, several genes were sequenced and compared with *B. burgdorferi* sensu stricto strain B31. A 1296 nucleotide portion of the *OspA/B* operon revealed 161 point mutations, 3 codon deletions and 2 codon insertions (86% similarity). Four mutations were found in a 567bp fragment of the 16S rRNA gene. OppAII-OppAIII comparisons revealed 48 point mutations and two insertion/deletions in an 841bp fragment (94% similarity). BLAST searches of each gene revealed that this strain was most closely related to the *B. burgdorferi* sensu lato complex. These data suggest that strain W97F51 may be a new *B. burgdorferi* species. Molecular information about this strain may be beneficial in human vaccine development.

#PI-26

Microtubule Cytoskeletal Changes Observed During Retroviral Envelope Protein-Mediated Syncytial Cell Formation. *Michael Salmela (Timothy Lyden), Department of Biology, UW River Falls, 410 S. Third St., River Falls, WI 54022*

In this study, HIV-1 envelope gene transfected-CHO cells were employed to evaluate microtubule cytoskeletal reorganization following membrane fusion to target HeLa cells. CHO-WT and HeLa cells co-cultured in chambered slides were washed, fixed, pretreated with 0.1% SDS and immunolabeled for α and β tubulin. Numerous syncytial cells were observed in cultures from 24 to 72 hours with the majority being localized to the edges of the monolayers. These syncytia contained between two and 10 identifiable nuclei, based on DAPI staining. Classic microtubule architecture was observed in the mononuclear CHO-WT and HeLa cells and in many of the cultures mitotic figures were also clearly evident. On the other hand, syncytial CHO-WT/HeLa cells presented with a complex range of microtubule patterns. These included single organizing centers located above or adjacent to clustered nuclei and non-classical features including very distinct “geodesic-like” structures over nuclear clusters with numerous apparent organizing centers. This observation is in keeping with recently proposed tensegrity models of cytoskeletal architecture. Our continuing efforts are focused on documenting and understanding the role of these unusual structures, as well as general microtubule involvement in clustering of nuclei within the overall context of retroviral envelope-mediated cellular fusion.

#PI-27

Induction of Dendritic Cell Phenotype and Analysis of HIV Co-Receptors in a Cultured White Blood Cell Line. *Sarah Schimmel (Karen Klyczek), Department of Biology, UW River Falls, 410 South Third St., River Falls, WI 54022*

In order to infect white blood cells, human immunodeficiency virus (HIV) must bind to two cell surface receptors, CD4 and a chemokine receptor (CCR5 or CXCR4). The goal of this project is to determine whether there is a physical association between these co-receptors on white blood cell surfaces, prior to HIV binding. Preliminary results using immunogold labeling on fresh blood cells suggested that there was a non-random association of these receptors, but receptor expression on these cells was too low to obtain statistically significant data. Dendritic cells (a type of white blood cell) have been reported to express increased levels of chemokine receptors compared to other white blood cells. Therefore, we are treating an immature human monocyte cell line with phorbol myristic acetate (PMA) and the calcium ionophore A23187 to induce differentiation to a dendritic-like phenotype, and then measuring chemokine receptor expression by RT-PCR. Once conditions that increase receptor expression are established, immunogold labeling will be used to analyze the relative distribution of these receptors on the cell surface.

#PI-28

Determination of the Presence of Plasmid-Borne LmPH Genes in Phenol-Degrading Bacteria. *Greg Walter (Elaine Hardwick), Department of Biology, UW River Falls, 410 South Third St., River Falls, WI 54022*

The purpose of this project is to (1) use DNA molecular techniques such as gel electrophoresis and PCR to determine the presence of the LmPH genes and (2) determine if LmPH genes are present, and if they located on chromosomal or plasmid DNA. Phenol-degrading bacteria have been known to have the same LmPH genes (1). This study of our freshwater phenol-degrading bacteria will determine if the LmPH genes are present and if they are located on plasmid or

chromosomal DNA. If the site of the LmPH genes in our freshwater bacteria is located, knowledge could be used for bioremediation of phenol-polluted areas.

#PI-29

Bird Monitoring in Carara National Park, Costa Rica. *Nicholas Walton (Robert Howe and Troy Abel), Department of Biology, Cofrin Arboretum Center for Biodiversity, UW Green Bay, 2420 Nicolet Drive, Green Bay, WI 54311*

In the first two weeks of January 2004, 15 University Wisconsin Green Bay students traveled to Costa Rica to supply manual labor and research for Carara National Park. This study provides an overview of the bird monitoring project that we hope will be the beginning of a long-term program carried out by park staff and volunteers. This is the first project of its kind for this part of Costa Rica. During our 14-day stay, point counts were conducted using standard methods at six locations in the park. Call playbacks were used for four species during the last five minutes of each count. Most counts were in primary forest but also included riparian and agricultural habitats. A total of 27 bird species were recorded. Point count data sheets and a GPS unit were donated to the park. The goal of this project was to empower the staff at Carara National Park to increase their bird monitoring efforts and thereby provide a new educational tool to strengthen their mission of conservation and education.

#PI-30

Encoding Specificity and Verbal Memory in the Presence of Popular Vocal Music. *Michelle Gross and Kiersten Karlsen (Kathleen Stetter), Department of Psychology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

This study applies the theory of encoding specificity to determine whether popular vocal music is distracting. Past studies have examined music and how it may be facilitative or distracting in cognitive performance. However, none have considered congruent conditions in encoding and retrieval of information. Thirty-nine university students completed a verbal memory task. The conditions were music or no music in the learning phase and music or no music in the testing phase. A 2 x 2 completely randomized factorial analysis of variance measured reaction time, number of answers correct, and d' . Perceived distraction was measured by a one-way analysis of variance. Significant effects were evaluated with Tukey HSD post hoc tests. Controls were random assignment, holding experiences constant for all groups, and using computers to measure variables. Reaction time results yielded no significance, $p > .05$. The measure of sensitivity, d' , was significantly greater in congruent conditions, $p < .01$. The number of answers correct was significantly greater in congruent conditions, $p < .01$. Perceived distraction was significantly higher when music was not present during the testing phase, $p < .05$. This study refuted results from many previous studies in that popular vocal music was found to be facilitative, not distracting.

#PI-31

Eating Disorder Patterns at Diverse U.S. Universities. *Kimberly Masters, Samantha Cook, Sara Nolta and Megan Green (Allen Keniston), Department of Psychology, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Across the United States research has indicated that 1% to 3% of the female population meet the criteria to be diagnosed with an eating disorder (Nattiv & Lynch, 1994). Females that are of

college age are at an even greater risk with 15% to 20% diagnosed (Nelson, Hughes, Katz & Searight, 1999). Although the incidence rate of eating disorders in the male population has not been well established and the need for more research is great, a recent study has shown that approximately one million men may suffer from an eating disorder (Nelson, Hughes, Katz & Searight, 1999). In view of these statistics, the study to be reported has several objectives: 1) Expand on a previous study conducted by present author, *Eating Disorders on Campus: Prevalence Rate and Correlates*, to include both males and females, to expand on demographic variables, and to include college campuses from different regions throughout the United States. 2) Identify characteristics of students at-risk for developing an eating disorder. 3) Help assess the need for treatment and/or prevention services on college campuses. 4) Investigate the correlates of region and type of university on disordered eating attitudes and behaviors. 5) Collaborate with other universities to assess the generality of results.

#PI-32

The Gender Discrepancy in Reported Number of Sexual Partners: Effects of Anonymity. Lindsay Norris (*Carol Oyster*), Department of Psychology, UW La Crosse, 1725 State St., La Crosse, WI 54601

The gender discrepancy in reported number of sexual partners remains an unexplained phenomenon. Men consistently report having had a greater number of sexual partners than do women. One explanation of the gender discrepancy is that a sexual double standard causes men to over-report and women to under-report number of sexual partners. However, the existence of a sexual double standard has been debated among psychologists. This study will attempt to create socially desirable responding to see whether or not the social standard is the same for males and females. Half of the participants will be surveyed under anonymous conditions while the other half will be led to believe that their responses will not be anonymous. My hypothesis is that males in the “non-anonymous” condition will report having had a greater number of partners than will males in the anonymous condition, while females in the “non-anonymous” condition will report having had fewer sexual partners than will females in the anonymous condition. The gender discrepancy would then be greater in the “non-anonymous” condition, supporting the existence of a double standard and explaining at least a portion of the gender discrepancy. Data was collected in January/February of 2004.

#PI-33

Alternatives to Incarceration in the State of Wisconsin. Lynsey Johnson (*Kara Lindaman*), Department of Public Administration and Political Science, UW La Crosse, 1725 State St., La Crosse, WI 54601

Alternatives to incarceration in the state of Wisconsin are a very valuable resource to non-violent offenders with alcohol and substance abuse problems. These alternatives serve punitive intentions, but at the same time they allow the offender to be rehabilitated and reintroduced into society. On the other hand, forced rehabilitation or incarceration results in many negative side effects and consequences. For example, if offenders are forced into treatment against their own will, there may be a lack of self-motivation. From a survey of probation officers in the state of Wisconsin, data was collected and analyzed to better understand the policy environment towards alternatives to incarceration. The findings suggest interesting results. An overwhelming number of probation and parole agents throughout the state of Wisconsin think that spending levels are fine in the state regarding corrections; however, they also argue that the spending is occurring in the wrong places (prisons and jails). They think that money needs to go toward rehabilitation and

prevention programs. In addition, they responded that insurance is also needed for several outpatient programs in the rehabilitation process and most offenders do not have jobs that supply insurance because of their substance abuse problems. There is clearly a vicious cycle that occurs which prevents self-motivated offenders to get help. Once an offender is allowed into a rehabilitative program, more attention needs to be given to the rehabilitation process by agents and counselors. In sum, the state of Wisconsin must reevaluate some of the policies concerning corrections. Scarce money must be reallocated to where it will do the most good and, at the same time, programs must be developed to rehabilitate non-violent offenders with substance abuse problems.

#PI-34

The Effect that Studying Abroad has on Undergraduate Students' Political Interest and Involvement. *Kathryn Clay (UW River Falls) (Thomas Hench[‡] and Tim Lyden[†]), [‡] Department of Management, UW La Crosse, 1725 State St., La Crosse, WI 54601; and [†] Department of Arts and Sciences, UW River Falls, 410 South Third St., River Falls, WI 54022*

Studying abroad has many substantial impacts on individuals. A whole host of subtle psychological changes begin to take place as the minds of students and/or faculty transform under the influence of a new country and a new culture. Many of the students studying abroad are exposed to politics from a different angle and through their experiences, become more interested in political issues. But, with their new insight into the American government and political stance, will they become more active citizens? This is an especially important issue to consider because we are living in a democracy that has seemed to classify no political involvement as the norm. A democracy is based on the idea that citizen will participate in political issues, so it is crucial that citizens be involved. By having students fill out simple surveys answering straightforward questions about their political involvement and experiences that some of them had abroad, one can compare and contrast the political interests of students who have studied abroad and those who haven't. The results determine whether or not studying abroad will increase students' interest and involvement in politics both passively and actively.

#PI-35

Analysis of Potawatomi Site Selection in Southeastern Wisconsin. *Matthew Liesch (Robert Sasso), Department of Sociology-Anthropology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

The Potawatomi had settled much of present-day southeastern Wisconsin in the approximately 100 to 150 years prior to Euroamerican settlement. Surveyors and historians alike have recorded evidence as to the location of Potawatomi sites. Archaeological evidence increases the total number of known Potawatomi sites to approximately 300. This research is a compilation of site data regarding the best-known location and characteristics. ArcView GIS was used to plot out locations of known Potawatomi settlement and land use. From this, other layers were added. This research integrated several variables for the analysis of Potawatomi site selection, such as proximity to water source, proximity to navigable waterway, soil type and vegetation cover. Spatial analysis methods were then performed using ArcView. This study contributes not only to our understanding of the Potawatomi, but also to an ever-growing body of knowledge pertaining to cultural ecology.

Poster Session II

*Rooms 201-202
2:00 to 3:30 p.m.*

Abstracts

** abstracts have been edited only for consistency of style*

#PII-1

Migration, Histochemistry and Histopathology of *Ribeiroia ondatrae* (Platyhelminthes: Trematoda) in Snail and Tadpole Intermediate Hosts. Sarah Orlofske, Jessica Orlofske and Nathan Peterson (Stephen Taft), Department of Biology, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481

Increases in amphibian abnormalities including extra, missing or reduced appendages, eyes and jaws have been observed in 60 amphibian species in 46 states and four Canadian provinces. Trematode infection is among suggested causes. *Ribeiroia ondatrae* has a life cycle involving birds as definitive hosts, and snails and amphibians as primary and secondary intermediate hosts, respectively. During the spring, summer and fall of 2003, 947 *Helisoma sp.* snails were collected at McDill Pond (SE¹/₄ sec4, T23_N, R8_E; Portage Co.; Wisconsin) and dissected to check prevalence. Of 292 infections, 140 were identified as *R. ondatrae*, resulting in a prevalence of 18.8%. Distribution of glycogen (an energy source) will be compared in the digestive gland of infected vs. non-infected snails. Glycogen depletion in the tails of larval parasites allowed to swim for periods of zero, one, two and four hours will be recorded. Tadpole stages (n~70) of *Rana sylvaticus*, (wood frog), have been collected. Twenty were exposed to parasites for periods of two and four hours, and 10 unexposed controls. Tissues of snails and tadpoles were prepared to study migration pathways of larval parasites, as well as aspects of histochemistry and histopathology.

#PII-2

Presumptive and Confirmational Testing of Illicit Compounds: A Quantitative Analysis Laboratory Exercise. Molly Ross, Crystal Hoffmann and Rachael Lehr (Charles Cornett), Department of Chemistry and Engineering Physics, UW Platteville, One University Plaza, Platteville, WI 53818

The presumptive and confirmatory analysis of illicit compounds is an effective means of teaching introductory instrumental techniques. Presumptive tests for different categories of narcotics include the Duquenois, Marquis, Ehrlich's, Mayer's and Mandelin, which are color tests. Instrumental methods incorporated are GC-MS, FTIR and UV-Vis. Characterized compounds in the lab exercise include non-scheduled solutions of 3,4-dimethylenedioxyamphetamine (MDA), cocaine, heroine and tetrahydrocannabinol (THC). The second phase of the exercise involves the comparison of BondElut® protocol from an ASCLD- certified crime lab and popular user myths related to home extraction of opiates. Experimental efficiency and assessment of learning outcomes will be presented.

#PII-3

Snowden River Water Quality Study: Examination of a Stream's Ability to Support a Trout Population. Leon Downing, Mark Graczykowski and Matt Nechvatal (Max Anderson and Kris Wright), Department of Civil and Environmental Engineering and Biology Department, UW Platteville, 1 University Plaza, Platteville, WI 53818

The reclamation and restoration of meandering streams in Wisconsin is fast becoming a large concern for the Wisconsin Department of Natural Resources and several wildlife conservation organizations, including Trout Unlimited and the Sierra Club. For this project, a small stream, the Snowden Branch of the Little Platte River, located south of the City of Platteville in Grant County, was studied. Several aspects of the stream were analyzed: the background water quality of the stream, water quality during storm events, and the ecological quality of the stream.

Background and storm event water samples were analyzed for nutrients, suspended solids and fecal coliform levels. These characteristics were used to assess the overall water quality of the stream. Mapping using a hand-held global positioning system (GPS) was used to document the location and quantity of important ecological aspects of the stream, including silt beds, erosion banks, stream riffle sections, pools, and areas with bedrock stream bottom. Areas of concern were documented with photographs. Documentation of the quantity and quality of insect and plant life around the stream produced a model of the stream ecosystem. All of these characteristics have been used to assess the potential of the stream to support a trout population.

#PII-4

Sprint and Vertical Jump Performances are not Effected by Six Weeks of Static Hamstring Stretching. *David Bazett-Jones (Mark Gibson), Department of Exercise and Sports Science, UW La Crosse, 1725 State St., La Crosse, WI 54601*

Stretching has been promoted as an injury prevention method and a performance enhancer. As of late, many studies have investigated the validity of the latter claim. None of these have studied the effects stretching has on a gross athletic performance. Therefore, the purpose of this study is to investigate whether or not six weeks of hamstring stretching positively affects sprint and vertical jump performances. Twenty-six Division III female track athletes participated in this study. Subjects were randomly sorted into stretching and control groups. Subjects were tested in a 55-meter sprint, with a 15-meter initial acceleration interval, and vertical jump before and after the six week stretching protocol. The stretching protocol consisted of four repetitions held for 45 seconds. Subjects were positioned standing with their heels on an elevated surface, legs fully extended, and pelvises in anterior tilt, square to their feet. The variables were analyzed using an ANOVA repeated measures design. No significant differences were found with any of the five variables between or within the stretching and control groups. In conclusion, six weeks of static hamstring stretching does not augment any changes in knee range of motion or sprint and vertical jump performances.

#PII-5

Structure, Bonding and Vibrational Frequencies of Halo-acetonitrile-BF₃ Complexes: Solid-State IR Spectra, Crystal Structures and Computations. *John Wrass and Chris Knutson (James Phillips), Department of Chemistry, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Nitrile-boron trifluoride complexes are now well known for their remarkable structural chemistry. Specifically, structures suggest that the B-N bonds are intermediate between bonding and non-bonding interactions. Furthermore, there are large structural differences between the gas and solid state. We have prepared F-CH₂CN-BF₃, Cl-CH₂CN-BF₃, Br-CH₂CN-BF₃, and I-CH₂CN-BF₃, and crystal structures all have B-N distances around 1.6 Å, much like solid state CH₃CN-BF₃. Also, we have conducted an extensive computational study of these complexes, using the B3LYP method with basis sets ranging from 6-31G* to 6-311+G**. The results from these calculations are fairly consistent with B-N distances around 2.5 Å and N-B-F angles of about 93°. Also of note, all are bent slightly about the B-N-C linkage. These calculated structures, however, differ dramatically from the measured solid-state structures. For example, the calculated B-N distance for F-CH₂CN-BF₃ is 2.44 Å, while the solid-state is only 1.65 Å. Consequently, the measured vibrational frequencies for the solid complexes differ distinctly from the computed frequencies. Recent frequencies from argon matrix experiments will be discussed in the context of this medium-dependent structural chemistry.

#PII-6

Observations from Syncytial Cell Formation Provide Evidence in Support of the “Tensegrity” Model of Cellular Architecture. *Michael Salmela (Timothy Lyden), Department of Biology, UW River Falls, 410 S. Third St., River Falls, WI 54022*

A central question in human reproductive biology over the past 25 years has centered on the terminal differentiation of placental trophoblast. Normal development of this interface between the maternal circulation and fetal tissues is marked by expression of a number of endogenous retroviral proteins including a fusion-mediating envelope or surface protein. In continuing efforts to understand this developmental process, we have employed an HIV-1 envelop-mediated fusion model system (CHO-WT/HeLa) to study morphological changes and associated reorganization of cellular cytoskeletal components. During the course of these studies, we developed a set of data that can best be understood and interpreted in terms of a recently proposed model of cellular architecture called “tensegrity.” This model argues that all cellular structures maintain their shape and internal organization through the dynamic balancing of force generating elements (tensional) and force directing or compensating elements (compressional). The most straightforward application of these ideas in cell biology assumes that actin is a “tensional” element, while microtubules are “compression” elements, and the intermediate filaments are inter-convertible between the two states. Here we present a number of tensegrity-related observations from recent work that suggest a unique perspective on retroviral-mediated syncytial cells and the trophoblast developmental fusion process.

#PII-7

Safeguarding Municipal Water Distribution Systems from Terrorism Threats: A Remote Fiber-Optic Monitoring System with Fiber Coatings Responsive to Changes in the Chemical Environment. *Nicole Adameczyk, Alan Schwabacher and Anna Benko (Peter Geissinger), Department of Chemistry, UW Milwaukee, 3210 N. Cramer St., Milwaukee, WI 53211*

One of the most frightful scenarios is that terrorists will attack a community’s water supply with chemical and/or biological agents. We are proposing a technology to enable real-time, continual monitoring of water-distribution networks. The system uses optical fibers that are placed inside the water pipes along the distribution network. Sensor regions that are responsive to the presence of many different chemical and biological agents are located in the fiber cladding. Our unique Fiber-Optic Combinatorial Chemistry technique allows for (1) the efficient fabrication of large arrays of sensor regions on optical fibers and (2) the spatially-resolved, real-time, optical evaluation of status of these sensors. The sensor regions are monitored from a central facility through laser pulses propagating down the fiber core, triggering light pulses in the individual sensor regions, which are detected and analyzed at the front end of the fiber. This scheme allows for the initiation of targeted countermeasures, as the location of the insertion of agents into the distribution system is immediately known. In this contribution we discuss the layout and function of such a monitoring system and describe the synthesis of porous fiber-cladding materials containing sensor molecules that respond to the presence of agents.

#PII-8

Design and Synthesis of New Compounds Based on Capsaicin and N-Arachidonoyl Dopamine: Potential Analgesic Agents. *Sarah Barfknecht (David Rusterholz), Department of Chemistry, UW River Falls, 410 South Third St., River Falls, WI 54022*

Capsaicin, the chemical that is responsible for the pungency of chile peppers, also desensitizes the nerve after the initial hot sensation. This observation has led to the inclusion of capsaicin in some over-the-counter pain-relieving commercial products; however, it still has the disadvantage of initially eliciting a burning pain sensation before it provides any pain relief. VR1, the natural receptor activated by capsaicin, was cloned and identified in 1997. In 2002, N-arachidonoyl dopamine was identified as the natural endogenous ligand for this receptor. Previous structure-activity relationship (SAR) studies of capsaicin have identified several major regions of its structure that are thought to be involved in receptor interaction. Our research will focus on intensifying the pain-relieving aspect and minimizing the hot sensation. Several target structures based on both capsaicin and N-arachidonoyl dopamine have been designed. These structures contain: a) an amide of a hydrophobic acid, b) a substituted benzene ring, and c) a variable distance of separation between these two. The chemical syntheses of these new structures will be presented.

#PII-9

Synthesis and Conformational Study of 1-Arylpiperazines. *Chester Duda (June Li), Department of Chemistry and Engineering Physics, UW Platteville, 1 University Drive, Platteville, WI 53818*

Serotonin is an important neurotransmitter implicated in a variety of physiological tasks, including learning and memory. Defects regarding serotonin levels and receptors result in problems ranging from hyperactivity to panic attacks. 1-Arylpiperazines bind to the same sites as serotonin. 1-Arylpiperazines affinity to serotonin receptors can be altered by changing the presence and location of substituents on the phenyl ring. This research is designed to use ^{13}C nuclear magnetic resonance (^{13}C NMR) to look at the steric and electronic effects of different substituents while the 1-arylpiperazines are in solution. ^{13}C NMR is an ideal choice for this not only for its sensitivity to steric and electronic effects, but also for empirical rules that have been developed to predict such effects. Essentially, if the conjugation between the lone pair of electrons on nitrogen and the phenyl ring is weakened, the signal created by the phenyl group should shift downfield, and visa versa. The addition of different substituents to the phenyl group contributes significantly to this effect. Deviation and similarity to these predictions can be informative with regards to the structural influence of these effects.

#PII-10

A Molecular Dynamics Study of Liquid Acetone with Polarizable Potentials. *Tarisa Lerro (Tsun-Mei Chang), Department of Chemistry, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

We are interested in understanding the detailed molecular and thermodynamic properties of acetone. Using molecular dynamics computer simulation techniques, we developed a polarizable all-atom potential model to describe the interactions, as opposed to the united-atom model that previous studies have employed. The effects of adjusting the potential parameters as they relate to the structural, dynamical, and thermodynamical properties of acetone will be investigated and presented.

#PII-11

Why Cationize Cellulose? Improving Cellulose Charge Characteristics Through Chemical Derivation. *Steven Nieland (Thomas Zamis), Chemistry Department, UW Stevens Point, 2100 Main St., Stevens Point, WI 54481*

When developing filter media and absorbents, improved surface charge characteristics can significantly increase performance. Surface charges assist in removing sub-micron particles that are significantly smaller than a filter's pore structure. For absorbent media, altering charge levels can change absorbance and/or release rates of polar solvents, resulting in improved performance for personal care, air freshener and aromatherapy products. Positive surface charge is normally achieved by application of cationic wet strength resins. Variations in resin manufacture lead to differences in charge capacity and strength. Surface charge achieved in this fashion is relatively weak and limited to narrow bands of pH. The charge capacity of resin is related to the number of bonding sites on the cellulose. Creating fibrils through wet refining increases the number of sites, but refined fiber tightens the pore structure, which may cause premature filter failure. As an alternative to resins, several cellulose derivations were produced by grafting functional groups chemically onto the cellulose. The literature suggested that significantly higher charge strength and capacity could be achieved through derivation. Utilizing zeta potential analysis for charge strength and dye challenge testing for charge capacity, the project demonstrated promise in using derivatization as a significant improvement in cellulose charge modification.

#PII-12

The Role of Sugars, Amino Acids and Silicic Acid in the Formation of Rock Coatings. *Ajish Philip (Vera Kolb), Department of Chemistry, UW Parkside, 900 Wood Road, Kenosha, WI 53141; William Zhu, Johnson Polymer, 8310 16th St., P.O. Box 902, Sturtevant, WI 53177; and Randall Perry, Department of Earth and Space Sciences, Astrobiology, Box 351310, University of Washington, Seattle, WA 98195*

We are interested in the mechanism of formation of rock coatings. The following experiments are ongoing in our lab: Sodium silicate solution (1.4 wt%, 5 mL) was mixed with two drops of 0.25 wt% solutions of each of 18 various amino acids and sugars, FeCl₂ and MnSO₄, and 1% suspension of each of six different clays (four montmorillonites, one illite and one hectorite). This mixture (pH of ca.10) was poured over the rocks and exposed to heat and/or UV light on a continuous basis. Upon evaporation the solutions were replenished. Another experiment was performed in which the pH of the initial sodium silicate solution was adjusted to about eight. The micro-deposits will be analyzed using SEM/ TEM, and electron microprobe and compared with the natural rock coatings. On a more basic level, we are studying formation of sugar-metal complexes via C-13 NMR chemical shift method. The objective is to determine binding sites of sugars with metals that are found in the natural rocks. So far, we have obtained promising results for ribose-Ca complexes. Acknowledgments: This research was funded by the Wisconsin Space Grant Consortium and the University of Wisconsin-Parkside Dean's and Provost's research funds.

#PII-13

Oxygen Atom Transport Using Rhenium. *David Dotzauer, Merryn Janzen and Cole Urbain (Timothy Zauche), Department of Chemistry and Engineering Physics, UW Platteville, 1555 Circle Drive, Platteville, WI 53818*

Many industrial applications use Oxygen Atom Transport reactions. The making of many different plastics deals with the selective oxidation of petroleum chemicals. Nitric acid is often used as an oxidizing agent in many of these petroleum industry applications. However, this process has NO_x byproducts, which causes a large environmental concern. Many industrial producers have been able to trap over 50% of the NO_x gases before they reach the environment, but there is still a high percentage of toxic gases being let out into the environment. There is a possibility of using hydrogen peroxide or oxygen gas as the oxidation source, which would eliminate the worry of toxic NO_x byproducts. We are working on developing a catalyst by combining Rhenium with biological enzymes. We have synthesized this compound with the Rhenium center, and are currently working to increase yields of our pure product. We are now performing tests to discover its reactivity and catalytic abilities.

#PII-14

Isoform-Dependent Differences in Apolipoprotein E Mercury Binding. *Erinn Jochimsen (Charles Cornett), Department of Chemistry and Engineering Physics, UW Platteville, 1 University Plaza, Platteville, WI 53818*

The relationship between apolipoprotein E 4 (Apo E4) and the occurrence of Alzheimer's Disease is well known; however, the biochemical mechanism behind this association is not well characterized. This research project examines the potential differences in mercury binding between free Apo E2 and Apo E4 isoforms. Equilibrium dialysis is used to measure the binding of mercury. Mercury analysis is performed by cold vapor atomic absorption spectrometry (CVAAS). The detection limit of the CVAAS technique is 4.2 ppt Hg. Results of these experiments including Scatchard plots and future plans to examine changes in ApoE isoform confirmations will be presented.

#PII-15

A Comparison of BTEX in Hyporheic and Surface Waters Adjacent a Leaking Underground Fuel Tank. *Scott Witkowski, Thomas Leitzinger and Bennett Dressler (Charles Cornett), Department of Chemistry and Engineering Physics, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Leaking underground fuel tanks (LUFT) pose a threat to Wisconsin's groundwater. This study examines a LUFT site on the Rountree Branch and the possible distribution of benzene, toluene, ethylbenzene, and xylenes (BTEX) throughout the adjacent surface and hyporheic waters. Solid Phase Microextraction (SPME) is used to pre-concentration stabilized water samples prior to gas chromatography – mass spectrometry (GC-MS). Initial GC-MS data collected during July and August indicate a statistically significance increase ($p < 0.05$) in the BTEX levels of the adjacent surface waters compared with hyporheic zone samples. Longitudinal results are presented and discussed in this poster.

#PII-16

Optical Microscopic Investigations of Hyper-Eutectoid Damascus Sword Steel. *John Libal (James Hamilton[†] and Kyle Metzloff*), Department of Chemistry and Engineering Physics[†] and Department of Industrial Studies*, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Damascus steel was first produced over a thousand years ago and was coveted for swords and blades. However, the recipe for this ultra strong, flexible steel was lost until its rediscovery in the 1980s. Unique to this patterned steel are tiny saw-tooth carbide grains imbedded into the edge, which enables the blade to cut, while retaining flexibility, even if it feels dull to the touch. In the conventional process, the steel was folded upon itself hundreds of times, creating a layered work of art—a fingerprint unique only to that sword. In this investigation, a modern recipe that uses, for the first time, forging techniques to replicate the steel structure without folding is used. By controlling the crystallization and dendrite formation around the impurities in the steel, this induction furnace process will make modern production processes possible for the material to be manufactured in a fast and cost efficient way. Using electron and optical microscopic techniques we are beginning to analyze the microstructure and compare it to that of other steels, both qualitatively and quantitatively, allowing us to quantitatively compare our samples with specimens from antiquity.

#PII-17

The Distribution of Phosphorus in Dorn Creek (Dane County, Wisconsin). *Christopher Olson and Brett Gee (Mike Penn), Department of Civil and Environmental Engineering, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Phosphorus is a leading cause of water quality degradation in Wisconsin's lakes and streams. Agricultural runoff is a primary mechanism by which phosphorus enters surface waters; once in the stream, its fate is not well documented. Measurements of stream characteristics (stream and channel width, water depth, sediment thickness, stream gradient, sediment particle size, sediment volatile solids and sediment water content) were made at some or all of 33 sites on Dorn Creek in Dane County, Wisconsin. Sediment cores were collected at every site, and analyzed for total phosphorus (TP) concentration in 1 cm or 2.5 cm sub-samples with depth. The distribution of TP in the stream sediment, both horizontally and vertically, was examined. The vertical distribution shows that TP concentrations may decrease with depth in the sediment. The horizontal distribution demonstrates that TP concentrations are highly variable and are dependent upon stream characteristics such as organic content, particle size and sediment thickness.

#PII-18

Who Do We Want? A Qualitative Content Analysis on Web Site Recruitment Messages. *Erin Bong (Scott Dickmeyer), Communication Studies Department, UW La Crosse, 1725 State St., La Crosse, WI 54601*

People are becoming more and more dependent on the Internet to get information about everything. When people are looking for jobs, the first place they will head is monster.com or hotjobs.com. Once they have found jobs they like, they will most likely head to company Web sites to learn more about the organizations. Recruitment messages on Web sites are crucial in attracting quality employees because that is the first place people look. It is important to the Organizational Communication field because organizations need to have quality employees to do quality work. Companies need to attract these kind of employees and it will be done through Web sites. My research focuses on Web sites of organizations that are considered “great places to

work” and have been for several years. I will analyze, through the text on the Web site, what these organizations are saying to the public and potential employees. I will do a content analysis, based on the Constant Comparative Method, and search for underlying themes. I will try to uncover what makes these organizations more successful than other companies in recruiting the “best of the best” employees through messages on their Web sites. This will help organizations that want to be a “great place to work” attract the best employees.

#PII-19

More Than Just Coworkers: A Qualitative Study of Workplace Friendships. *Sara Weisenbeck (Ronda Knox), Department of Communication Studies, UW La Crosse, 1725 State St., La Crosse, WI 54601*

Many full-time employees spend more time and communicate much more with their fellow coworkers than they do with their own families or closest friends. Some coworkers may see one another for as many as 40 or 50 hours a week. Since coworkers spend a considerable amount of time together, communicate extensively and build relationships, this is an important area of communication research. My research focuses on this important aspect of both interpersonal and organizational communication—workplace friendships. I plan to uncover the benefits and drawbacks of workplace friendships for employees. I will conduct five individual interviews with five coworkers who have become close friends because of their employment. The interviews will then be analyzed using the constant comparative method. Themes will emerge from the data indicating the positive and negative components of workplace relationships. Peer communication and workplace relationships have received scant attention in communication research; therefore, the results of this study will provide insight.

#PII-20

Database Development and Interactive Web Site Design for Pike River Water Quality Monitoring Program, Kenosha, Wisconsin. *Allan Ingraham and Rachel Nehmer (John Skalbeck), Department of Geosciences, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

A telemetry upgrade to an existing monitoring system will facilitate real-time data access direct to interested parties via the Internet. The upgrade to the existing system will facilitate better management of the water quality data collection from the Pike River. Real-time data access direct to our laboratory computer requires development of a database to efficiently store, manage and retrieve the large amount of data collected during this project. A redesign of the existing Pike River Water Quality Monitoring Web site to include a more interactive format is needed such that interested parties can choose the time interval and parameters to meet a specific need. A relational database was designed to interact with the Campbell LoggerNet software that is used with their CR10 datalogger. LoggerNet is scheduled to automatically download water quality data daily from a YSI 6600 multiparameter sonde in the Pike River and launch a Java program created to retrieve updated LoggerNet files and adds to the database. An interactive website was developed using Java scripts written to communicate with the Perl Hypertext Preprocessor (PHP) on the UW-Parkside server to access the database by user selection. The Web site was updated from an existing site to create a more user-friendly environment.

#PII-21

Determining Chemically Inhibitory Effects in Herbaceous Woodland Edge Species: Are Exotic Species More Allelopathic Than Natives? *Susan Hall (Gretchen Meyer), Department of Conservation and Environmental Science, UW Milwaukee, 3209 N. Maryland Ave., Lapham Hall 393, Milwaukee, WI 53211*

Invasive species have a substantial negative impact on biodiversity, second only to habitat loss. While there are some native plant species that can dominate in areas where they are found, in instances of invasion exotics outcompete even these natives. A number of theories have been presented as to why exotics are so successful, but it has been only recently that scientists and natural resource managers have suspected that allelopathy may play a role. This research asks two questions: first, whether some native species may indeed possess allelopathic characteristics and, then, whether introduced invasive species are more allelopathic than dominant native species. Species from the woodland edge community were tested, including three dominant native species (*Smilicina racemosa*, *Geranium maculatum* and *Viola papilionacea*) and three invasive exotic species (*Alliaria petiolata*, *Convallaria majalis* and *Leonurus cardiaca*). I measured the effects of leaf extracts from these six species on germination and seedling length of *Aquilegia canadensis* and *Aster sagittifolius*. The results show that invasive exotics were more allelopathic as a group to germination than the native species tested for both *A. canadensis* and *A. sagittifolius*. The research also supports other published studies on the impact of leaf extracts on germination versus seedling growth.

#PII-22

Effect of Post-Prandial Exercise Duration on Glycemic Responses to Feeding. *Doug Braucher (Carl Foster), Department of Exercise and Sport Science, UW La Crosse, 1725 State St., La Crosse, WI 65601*

Exaggerated blood glucose responses to eating are part of the complex of obesity-insulin resistance that is a current health problem in the developed world. Previous studies have shown that a 20-minute exercise bout after a meal may reduce the glucose response to a meal, thus providing a way of controlling exaggerated blood glucose responses. In this study, we sought to determine whether longer exercise bouts might provide better control of post-prandial glycemic responses. Healthy subjects consumed a meal (turkey sandwiches on white bread, macaroni and cheese, cranberry juice) and then either rested or performed 20, 40 or 60 minutes of moderate intensity exercise. Blood glucose was measured every 30 minutes for two hours. The longer exercise bouts produced a more pronounced decrease in blood glucose, with 3.3%, 4.7% & 6.7% decreases in total glucose attributable to the 20-, 40- and 60-minute exercise bouts, respectively. We conclude that moderate-intensity post-prandial exercise may be a viable strategy for controlling the blood glucose responses to eating and that longer duration exercise may be more beneficial.

#PII-23

Water Content Analysis and Eruptive Implications of Icelandic Volcanoes. *Audrey Peterson (Barry Cameron), Geo Sciences Department, UW Milwaukee, 2200 E. Kenwood Blvd. Milwaukee, WI 53201*

Water content plays a crucial role in determining the characteristics of a volcanic eruption, most significantly in potential explosiveness. While there are other factors that are key in ascertaining

the force of an eruption, including temperature and magma content, it is well known that gas content accounts for much of the force. In an ongoing study, we seek to analyze the water content of selected sub-glacial volcanoes in Iceland and to compare meteoric water removal techniques in an effort to validate a method used in a previous related study. Here we present the first numerical results from analysis of obsidian at different elevations for the levels of magmatic water content and its isotopic composition. Further research will examine samples from similar volcanoes at different latitudes to determine any correlation in matter content.

#PII-24

The Hinterlands of Major League Baseball. *Eric Lynde and Travis Franz (Tim Bawden), Department of Geography and Anthropology, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

Geographers have studied patterns in sports for more than three decades, largely beginning with John Rooney's 1969 pioneering article "Up from the Mines and Out from the Prairies: Some Geographical Implications of Football in the United States." Rooney argued at the time that "fan loyalties are probably among the strongest of human attachments, and their regional boundaries are well documented and functionally organized via major sports radio and television networks." Since that time, media technology and professional sports in general have been dramatically transformed, which, in turn, has likely had an impact on the regional boundaries of the fan base of professional teams. This poster examines geographic patterns associated with major league baseball in North America. In particular, we first illustrate how major league baseball has expanded and evolved geographically during the past 30 years and discuss the ways in which media technology and media coverage has changed during that time. Second, we examine the size and location of teams' fan base. Our data come from a 2002 online ESPN survey in which 40,000 respondents were asked a variety of sports-related questions including their favorite teams. The data were collected at the ZIP Code level, allowing for fine scale analysis, and transferred to a GIS for further spatial analysis. Third, through a multiple regression analysis we identified several major factors that help explain the size of a team's fan base including city size, age of the franchise and media coverage.

#PII-25

Undergraduate Research on Quaternary Deposits in Badlands National Park. *Alison Schwantes and Jessica Fenske (J. Elmo Rawling III), Geography Department, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Badlands National Park is well known for fast erosion and exposed ancient mammal fossils. There are, however, other geologic deposits that tell a story of more recent change in earth history. Undergraduate research into this past includes field description, sediment characterization, and luminescence and radiocarbon dating. This poster presents the results from two undergraduate projects from the 2003 summer field season.

#PII-26

Phytoremediation of Lead: Relationships Between Bioavailability and Extractable Soil Fractions. *Amy Furreness (Chris Evans), Department of Geology, UW Parkside, 900 Wood Road, Kenosha, WI 53141*

Plants have been studied for their potential of removing heavy metals from soils (phytoremediation). While phytoremediation of Pb has important implications for health problems, particularly those affecting young children, most efforts at phytoremediation of Pb have been performed on a site-specific basis because relationships between soil Pb contents have not been reliably correlated to particular extractive effects of plants. This study involves an in situ phytoremediation experiment on an urban garden plot with soil Pb levels from 100 – 300 mg/kg. Experimental plantings follow a randomized block design with at least three replicate rows of each plant per block. Soils are analyzed for lead levels using X-ray fluorescence, following sequential extractions of carbonate-bound and nominally “plant-available” Pb. Standard soil chemistry procedures are used for each fraction. Extractants include sodium acetate (carbonates) and EDTA (“plant available”). Data from these analyses will be statistically compared to plant tissue samples grown in the soils to examine relationships between bioavailability and extractable soil fractions. Correlations between soil fractionation and plant uptake of Pb can be used to generalize such relationships to other sets of soils with similar properties.

#PII-27

Hydrologic Data Collection for Assessment of a Seasonal Wetland at Chiwaukee Prairie, Pleasant Prairie, Wisconsin. *Jamie Lambert (John Skalbeck), UW Parkside, Department of Geosciences, 900 Wood Road, Kenosha, WI 53141*

Seasonal wetlands are problematic because they normally lack wetland hydrologic and/or vegetative indicators during drier portions of the growing season. Water-table elevations were measured within Sedge Meadow and Low Prairie plant communities at three coastal seasonal wetland sites in Chiwaukee Prairie to document the hydrologic fluctuation over the growing season. One water-table well was installed within each plant community and outfitted with a digital logger set to record water levels every half hour beginning in May 2003. Additionally, one deeper piezometer was installed at each of the three sites for a total of nine measurement locations within the study area. Weekly water-level measurements were collected manually in the three deeper piezometers and in the six water-table wells to verify the digital logger data. Data indicate that water levels were within the root zone from approximately 10% to 50% of the growing season at these wetland sites. Army Corps of Engineer water-level criterion for a wetland states that water levels must be within the root zone for 5% to 12.5% of the growing season. The data collected indicates that Chiwaukee Prairie has seasonal wetland sites and provides valuable information needed to make intelligent permit decisions in an area of high development.

#PII-28

A Survey of Directors of Nursing in Long-Term Care. *Laura Weiss (Douglas Olson and Mary Zwygart-Stauffacher), Health Care Administration and Nursing Systems, UW Eau Claire, 105 Garfield Ave., Eau Claire, WI 54702*

The goal of our research project, *A Survey of Directors of Nursing in Long-Term Care*, is to gather information about the role of the director of nursing (DON) in nursing homes. Long-term

care facilities are extremely challenged with a seemingly endless list of pressures: changing consumer preferences, staffing shortages and financial constraints. With difficulties such as these, an excellent leadership team is needed for the nursing home. One of the key ingredients for this team is the DON. Over the years, the definition and role functions of the DON has become broader to include greater authority, responsibility and range of control. A survey instrument was created to assess the present roles and responsibilities of this position. The survey was distributed to all DONs in Wisconsin and Minnesota nursing homes. There were 460 respondents and a response rate of 56%. The survey results were analyzed using quantitative and qualitative measures. To be highlighted in this presentation is the importance of time success and its relation to satisfaction. The number one factor related to satisfaction is resident and family relations. Rather than implying the new definition and roles of this position, our in-depth survey describes what is going on inside the walls of a long-term care facility regarding the pivotal role of a director of nursing.

#PII-29

An Investigation into the Gate Location and its Effects on Product Quality in Injection Molding. *Jeremy Gokey and Anthony Harris (Majid Tabrizi), Department of Industrial Studies, UW Platteville, 1 University Plaza, Platteville, WI 53818*

Gate location is an important aspect of thermoplastic part design. A proper gate location will facilitate high-quality parts. There are many different factors that affect the gate location, including flow properties of the plastic, gating into the approximate center of the part, wall thickness, gating into an obstacle, style of the gate, separation of the runner system from the part, aesthetic properties and ease of manufacturing. Computer simulations may help to facilitate the proper gate location and decrease the lead-time in producing a mold.

The focus of this research project is to determine ideal gate location given the previously mentioned factors for a single gated thermoplastic part, comparing both the experience of previous engineers through research of current materials, and the analysis of computer simulation software. The first portion of this project consists of research compiled from accredited individuals within the plastics industry; their perspectives and experiences have been combined to discuss the various possibilities in placing an ideal gate location. Following this, these ideas were tested through the use of Mold Flow (Mold Flow Inc.) in various part designs. The last portion of this project compares and contrasts the industry experience to the results of the simulation software.

#PII-30

The Investigation of the Change in Mechanical Property of Polyethylene/Propylene Compound Filled with Various Amount of Wood Particles. *Julius Mukasa and Hue Yang (Majid Tabrizi), Department of Industrial Studies, UW Platteville, 1 University Plaza, Platteville, WI 53818*

This investigation is involved with studying the effect of wood particles as an additive in altering the mechanical properties of polypropylene and polyethylene compounds. Multiple samples will be prepared with different amounts of each material. Then, the samples will be tested and compared with each other. By comparing each sample, the amount of the change in mechanical properties will be defined. By doing this experiment there will be more variety from which to choose. The material preparation will include the mixing of the polyethylene with polypropylene

and wood particles. The percentage of each compound will be ranged from 10% up to 50% to the total mixture. The mechanical properties of the samples will be verified using Tensile, Notched Izod and Impact testing. The result will be compared to standard samples for verification. The expected result will provide a correlation between the mixture of the compound and the changes in mechanical properties of the tested samples.

#PII-31

Horicon Marsh Project of the Soil and Water Conservation Society UWSP Student Chapter. *Shannon Johnson (Ron Hensler), College of Natural Resources, UW Stevens Point, 800 Reserve St., Stevens Point, WI 54481*

The Horicon Marsh, located in southeast Wisconsin, is one of the country's largest freshwater marshes and has been recognized as a wetland of international importance. Agricultural basins surrounding the marsh are contributing a significant amount of nutrient loading, but it is unclear as to the extent these human influences are having on the system. The U.S. Army Corps of Engineers is proposing to modify ditches that run through the marsh and return them to naturally meandering streams. An unintended outcome of this action may be an increase in eutrophication of the system due to increased nutrient trapping efficiency. In this study we will be collecting soil core samples throughout Horicon Marsh to produce a detailed spatial database that will allow us to visualize the nutrient storage within the soils of the 32,000-acre system. Throughout this process we hope to develop effective sampling methods and teach the individuals involved proper techniques of data collection, analysis methods, and use of GPS and GIS. The timeline for this project will be approximately 10 to 15 years and will encompass three phases. Phase one will be the development of collection methods, phase two will include the collection and processing of core samples, and phase three will consist of model projection and data analysis. The results of this research will be used to: compile data and build a visual representation (3-D model), link historic land use practices to patterns of soil quality and nutrients in the marsh, develop an understanding of how nutrients are distributed and captured in the marsh, draw inferences about future implications to the marsh based on current surrounding land uses, and determine the potential implication of specific management practices of the marsh and surrounding areas.

#PII-32

The Needs Assessment of a Lifestyle Redesign Program for Breast Cancer Survivors. *Michelle Schwandt (Deborah Dougherty-Harris), Department of Occupational Therapy, UW La Crosse, 1725 State St., La Crosse, WI 65601*

It is estimated that more than 200,000 new cases of breast cancer are expected to occur among women in the U.S. within the next year. Breast cancer survivors may have difficulty performing many daily occupations in the physical and psychosocial realms. A Lifestyle Redesign Program is a program in which occupational therapists help develop personalized plans for individuals to achieve healthy and meaningful lives through engagement in meaningful everyday activities. This type of program has been found to be successful with aging adults in increasing quality of life. While not yet developed for other populations, it seems that this type of program might be helpful for breast cancer survivors who are also struggling with daily occupations. The purpose of this research project was to assess the needs of breast cancer survivors in the La Crosse community to discover what services are presently available and if a Lifestyle Redesign Program would complement these services. Results gained from a survey of and interviews with local health

professionals and breast cancer survivors will be shared, along with recommendations based on these results.

#PII-33

Detecting Cosmic Rays at the South Pole. *Jonathan Eisch (James Madsen), Department of Physics, UW River Falls, 410 South Third St., River Falls, WI 54022*

A prototype 1000-gallon ice Cherenkov detector was constructed at the South Pole during the recently completed 2003-2004 austral summer season. Eventually 160 of these detectors will be deployed over a one square kilometer area to form a surface array known as IceTop. IceTop is a companion to IceCube, a one cubic kilometer neutrino detector scheduled to begin construction in the upcoming 2004-2005 austral summer season. This poster will describe the design, operation, and purpose of IceTop, and the challenges of working in the remote, extreme Antarctic environment.

#PII-34

A Content Analysis of the *Washington Post's* and the *New York Times's* Coverage of the 2000 Presidential Debates. *Katie Kneissel (Davida Alperin), Department of Political Science, UW River Falls, 410 South Third St., River Falls, WI 54022*

This paper is a content analysis of the *Washington Post's* and the *New York Times's* coverage of the 2000 presidential debates. The results showed that the coverage (quotations) from the newspapers was disproportionately negative compared to what was spoken by the candidates at the debate.

#PII-35

Learning Modalities and Subject Specific Comprehension. *Jenny Blindauer, Koren Nowak and Theresa Tonn (Kathleen Stetter), Department of Psychology, UW Oshkosh, 800 Algoma Blvd., Oshkosh, WI 54901*

This experiment explored the development of reading and listening ability to project future reading and listening ability in elementary students, and improve the comprehension skills of disabled readers. It looked at specific subject comprehension using dual modalities. By testing 27 college students on comprehension from reading, listening, or reading and listening combined, researchers could observe a difference in which modality is most effective in comprehension. This study was different from past studies on comprehension by testing for comprehension differences between specific subjects. Comprehension was measured by administering a test from the presented material on nominal, numerical and conceptual ideas. Rate of presentation, scoring, amount of time for testing, the test and text were all kept constant. Researchers also controlled for demand characteristics, reading and listening bias, learning ability and age. The design specification was three one-way designs for each dependant variable (learning modality), and one one-way design for overall comprehension. A single factor between subjects analysis of variance was used to calculate the results. It was found that reading and listening combined performed significantly better than listening only, and significance was also found in overall and conceptual comprehension. Studies like this help to expand human potential in learning and memory abilities.

#PII-36

Software Visualization of Neutron Scattering Experiments. *Chris Bouzek and Mike Miller (Dennis Mikkelson), Department of Mathematics, Statistics and Computer Science, UW Stout, P.O. Box 790, Menomonie, WI 54751*

The Integrated Spectral Analysis Workbench (ISAW) program aims to create a comprehensive set of user-friendly software tools for scientists working on neutron scattering experiments. This project, which is a joint venture between the University of Wisconsin-Stout and Argonne National Laboratory, has been partly funded by the National Science Foundation. Recently, several additions and improvements to ISAW have been proposed and implemented. Two such improvements are a Wizard concept and a new modular data Viewer architecture. The Wizard software is designed to bridge a gap between the complete flexibility of the main ISAW program and the relatively static nature of ISAW's built-in scripting language by providing a series of linked forms that a new ISAW user can easily step through. In this way, a new user can perform a "standard" analysis of an experiment without needing to be an expert in the use of ISAW itself.

The new Viewer architecture has been carefully designed to be a modular replacement for the current monolithic viewing system. It is composed of multiple levels of carefully designed components, such as virtual arrays, toolbox-like controls, top-level viewers, etc. The new design should promote a high level of software reuse, thereby enabling new data viewers to be created using a rapid application development (RAD) approach.

#PII-37

Bacteria are What They Eat: Carbon Incorporation into Bacterial Nucleic Acids. *Mark Holtan (Stephen Nold), Biology Department, UW Stout, P.O. Box 790, Menomonie, WI*

One approach to identify the active bacterial species in a microbial community is to measure the incorporation of stable carbon isotope (^{13}C) into nucleic acids. To investigate the fractionation that occurs during nucleic acid synthesis, four chemoorganotrophic bacterial species were grown aerobically in minimal medium amended with glucose as the sole carbon source. RNA and DNA were individually extracted, purified and analyzed for ^{13}C content by isotope ratio mass spectrometry. Overall, there was less ^{13}C in the whole cells (-1.6‰ to -3.3‰) compared to the carbon source. DNA displayed an additional fractionation (-0.6‰ to -1.7‰) compared to the cellular ^{13}C content. RNA, however, displayed more variable fractionation than DNA (+0.4‰ to -7.7‰), but most values were less than the cellular ^{13}C content. These results suggest that the $\delta^{13}\text{C}$ values of chemoorganotrophic nucleic acids closely reflect the $\delta^{13}\text{C}$ value of their carbon source. We are currently studying these phenomena in methane oxidizing bacterial species.