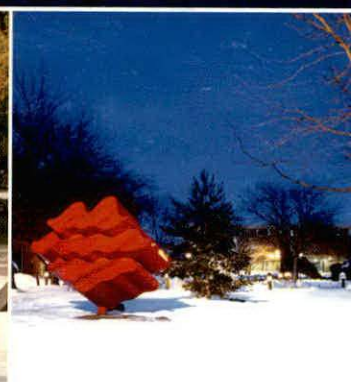
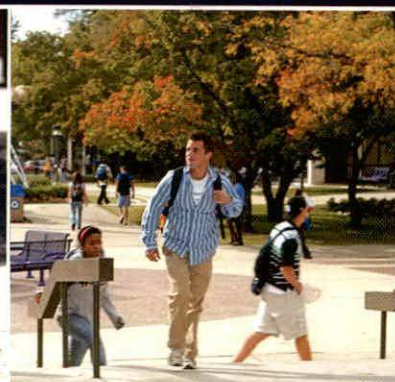
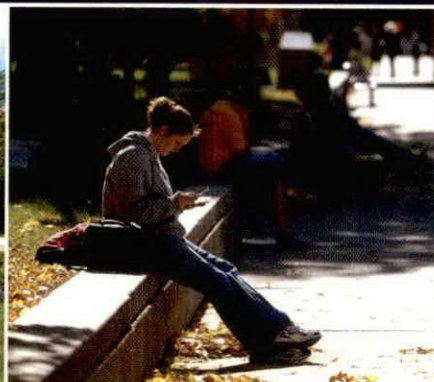


MINNESOTA STATE UNIVERSITY

MANKATO



2009 UNDERGRADUATE RESEARCH CONFERENCE

April 27 & 28, 2009



WELCOME

Welcome to the 11th annual Undergraduate Research Conference at Minnesota State University, Mankato. This conference provides an exciting opportunity for the University to showcase the research and creative activity of our undergraduate students. This year's conference has seen tremendous growth in the number of participants! Projects, submitted by 320 student researchers representing all University colleges, are the result of collaboration between talented and motivated undergraduate students and their dedicated faculty mentors. This year there will be a total of 180 presentations affording a wide array of on-going, outstanding scholarly and creative activity on our campus. Abstracts of these oral, performance, or visual arts projects and posters accepted for presentation are contained in this formal publication. I applaud the work of these students and the committed faculty members who served as mentors and encourage faculty, students, staff and guests to attend the formal presentations that will take place in the Centennial Student Union on April 27 and 28, 2009. Our vision to be known as a university where people expect to go further than they thought possible is clearly demonstrated by these students and faculty. The entire University community celebrates the achievements of these outstanding undergraduate students and congratulates all participating students and their faculty mentors.

A handwritten signature in black ink, appearing to read "Richard Davenport".

Richard Davenport
President
Minnesota State University, Mankato



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PHONE 507-389-1111 (V) • 800-627-3529 OR 711 (MRS/TTY) • FAX 507-389-6200
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URC PRESENTATION AWARDS

The purpose of judging and awarding is to recognize and promote high-quality research and creative activity. Within each oral or poster session, two judges independently rank each presentation, and the mean rank is the final rank. The best presentation in each session receives a "Best Presentation" certificate and a Barnes and Nobel Bookstore gift certificate to be presented at the URC luncheon. Judging of oral presentations is based on delivery and content. Posters are judged while presenters are attending and judges speak with presenters to identify the winner. Judges are graduate students, faculty, or graduate faculty. Judges for each session are identified by the URC Steering Committee. Winners are recognized in the URC online journal. <http://grad.mnsu.edu/research/urc/proceedings/archive/>

URC SPECIAL THANKS

Richard Davenport – President

Scott Olson – Provost Vice-President of Academic Affairs

Anne Blackhurst – Dean College of Graduate Studies and Research

Trent Vorlicek & Gina Wenger – Co-Chairs of the Undergraduate Research Conference

Marquita Oleson – Graduate Assistant of the Undergraduate Research Conference

Moderators and Judges

MSU Foundation Grant Committee

**Abstracts were written by the project facilitator and reviewed by faculty mentors. Any opinions expressed do not represent those of the URC Steering Committee or Minnesota State University, Mankato.*

Undergraduate Research Conference 2009 Steering Committee



Gina Wenger
URC Co-Chair
Art Education



Trent Vorlicek
URC Co-Chair
Chemistry & Geology



Dawn Albertson
Psychology



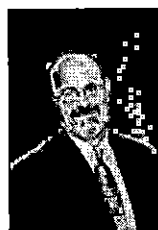
Richard Auger
Counseling and
Student Personnel



Laura Bartolo
McNair Scholars Program



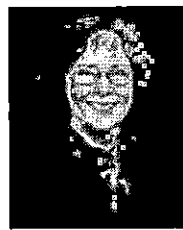
Barb Bergman
Library



David Bissonette
Family and Consumer
Science



Cindra Kamphoff
Human Performance



Elizabeth Sandell
Educational Studies



David Engen
Speech Communication



Heather Hamilton
Theatre and Dance



Judith Luebke
Health Science



Matt Loayza
History



Danae Quirk Dorr
Chemistry and Geology

Not Pictured: **Queen Booker** (Accounting and Business Law), **Geoffrey Goellner** (Biological Sciences)
Mark McCullough (Library)

A Note about Funded Research Projects at the 2009 URC

Some of the research projects presented as a part of the Minnesota State University, Mankato Undergraduate Research Conference were awarded funding in order to complete this research. The three types of funding awards are outlined below. Awardees of these grants are noted with their abstract.

Minnesota State University, Mankato Foundation Student Research Awards: up to \$2000

A Foundation grant is a \$1000 stipend and up to \$1000 for supplies. "Supplies" include consumable items and other necessary materials that are unavailable at the university. Stipends are issued once in the fall and once in the spring (\$500 each). These grants are funded by the Minnesota State University, Mankato Foundation. Foundation Grant Awardees are encouraged to report back to the Foundation upon completion of the project with a summary of his/her experience participating in the research process and the URC.

Undergraduate Research Conference Large Grant: \$850-\$1,100

A large grant is a \$600 stipend and \$250 or \$500 in supplies. "Supplies" include consumable items and other necessary materials that are unavailable at the university. Students may also be reimbursed for travel if it is necessary to meet the aims of the proposal. Stipends are issued once in the fall and once in the spring (\$300 each). These grants are funded by the University.

Undergraduate Research Conference Small Grant: \$250 or \$500

A small grant is \$250 or \$500 and can only be used for supplies. That is, it can't be used to provide any compensation for the student in the form of a stipend. If travel is necessary to meet the aims of the proposal, the student may be reimbursed using these funds. "Supplies" include consumable items and other necessary materials that are unavailable at the university. These grants are funded by the University.

7:30 - 4:30	Student Presenter, Moderator and Judge Check-in	CSU Ballroom Lobby
7:45 - 5:30	Coffee and Snacks Available Site Judges Gathering Room Open	CSU Ballroom North CSU 256
8:00 - 10:00	Session 1 Art and Art History	CSU 202
8:00 - 10:00	Session 2 Communication Studies, Education Studies, Elementary and Childhood Education, and Speech Communications	CSU 204
8:00 - 10:00	Session 3 Anthropology, History, Psychology, and Speech Communications	CSU 255
10:00-12:00	Poster Session A College of Arts and Humanities College of Social and Behavioral Studies	Ballroom South/Center
9:30-12:00	Session 4 Automotive Engineering and Technology, Computer Science, and Construction Management	CSU 253/254
10:00 - 12:00	Session 5 Chemistry, Mathematics, and Statistics	CSU 202
10:00 - 12:00	Session 6 Biology and Chemistry	CSU 284
12:00 - 1:00	Lunch (on your own)	
1:00 - 3:00	Session 7 Business Law	CSU 201
1:00 - 3:00	Poster Session B College of Science, Engineering, and Technology and College of Social and Behavioral Science	Ballroom South/Center
1:00 - 3:00	Session 8 Human Performance, Speech Communications, and Women Studies	CSU 255
1:00 - 3:00	Session 9 Social Work	CSU 204
3:30-4:30	URC Performance Presentation Art	Ostrander Auditorium

Tuesday, April 28**Schedule of Events**

7:30 - 12:30	Presenter Check-in	CSU Ballroom Lobby
	Coffee and Snacks Available	CSU Ballroom North
8:00 - 12:30	Site Judges Gathering Room Open	CSU 256
9:00 - 11:00	Session 10 Business Law	CSU 201
9:00 - 11:00	Session 11 Psychology	CSU 255
9:00 - 11:00	Session 12 Women Studies	CSU 204
10:00 - 12:00	Poster Session C College of Science, Engineering, and Technology	Ballroom South/Center
1:00 - 2:00	URC Reception and Award Ceremony	Ballroom South/Center

Art and Art History

Large Scale Paintings

Amy Magnuson (Department of Art)

Brian Frink, *Faculty Mentor (Department of Art)*

*Recipient of Undergraduate Research Conference Large Grant

Investigating Porcelain

Dennis Loucks (Department of Art)

Todd Shanafelt, *Faculty Mentor (Department of Art)*

*Recipient of Undergraduate Research Conference Small Grant

Through the Layers of Encaustic Skin: Fusing Print and Paint

Gina Hunt (Department of Art)

Brian Frink, *Faculty Mentor (Department of Art)*

*Recipient of Minnesota State University, Mankato Foundation Grant

Strata: Collaging Through Layers

Colin Ruff (Department of Art)

Liz Miller, *Faculty Mentor (Department of Art)*

*Recipient of Undergraduate Research Conference Small Grant

Political Art of the Black Panther Party: Cultural Contrasts in the Nineteen Sixties Countermovement

Melissa Seifert (Department of Art)

Alisa Eimen, *Faculty Mentor (Department of Art)*

Large Scale Paintings

Amy Magnuson (Department of Art)

Brian Frink, *Faculty Mentor (Department of Art)*

This creative project explores the idea of physical body movement in the act of painting. This is done by altering the size, content and characteristics of the artwork. Instead of limiting motion to my arms and shoulders to paint a picture the process forced me to incorporate my entire body. My process in creating large art work was investigating time in understanding historic and current artists, creating preliminary works in drawing and printmaking and finally to produce large-scale artwork from successful layouts. For this creative project, I researched three artists, Claude Monet, Willem De Kooning and Cecily Brown. These artists are all from different art movements and are known for their large expressionistic art pieces. My goal was to understand their approach and reason for their large-scale works. My paintings have changed from small intimate pieces, to large dramatic pieces. I have realized the size of the painting places the viewer in a different environment, develops a greater meaning and raises the impact of the message being presented. Creating monumental artworks breaks down boundaries of area and space for the viewer, alters the action of placing paint and evokes emotion with the use of brush strokes and body gesture.

Investigating Porcelain

Dennis Loucks (Department of Art)

Todd Shanafelt, *Faculty Mentor (Department of Art)*

Porcelain is type of clay that respected for its strength, its whiteness, and its translucency that often makes applied colors gorgeous. It is used to make functional art such as dinnerware, fine art, and sculptural objects. This project's goal was to sample and investigate as many different types of porcelains as possible, domestic as well as international. The goal was to gain personal knowledge within the field of ceramics as well as share this knowledge within the MSU art and ceramics department. Suppliers, from all across the United States, proved to be very cooperative in supplying samples of their porcelains for the purpose of testing. Specific characteristics were explored with each type. First, throwing qualities were tested, in other words how well the clay stood up on the potter's wheel. Plasticity, or how much the moist clay could be manipulated without tearing, was explored. Then, once many samples were fired, translucency, temperature range, and porosity were examined and noted for each type of porcelain. The great majority of this work was done in the MSU ceramic studio and campus.

Through the Layers of Encaustic Skin: Fusing Print and Paint

Gina Hunt (Department of Art)

Brian Frink, Faculty Mentor (Department of Art,

My intentions are to create a bridge between painting and printmaking, by means of encaustic painting (a wax-based medium for oil paint) have manifested through six paintings. I have worked in nursing homes since I was sixteen, and this has caused me to explore the aesthetic qualities of the sick and dying. In *Waxing Poetic*, Stavitsky explains: "Functioning as a seductive skin or membrane, encaustic is an unusually malleable and mutable medium that evokes bodily sensations, emotions, alchemical transformations, religious rituals, layers of history, and the passage of time" (19). My work investigates the physical layers of the body, metaphorically. I make art that is dependent on the human hand, and refer to contemporary artist Ghada Amer and modern artist Jasper Johns. Amer's body of work includes large-scale paintings that incorporate embroidery, which asserts the hand-made. I examine the quality of the hand-made and the juxtaposition created when combining etchings and abstract painting. Jasper Johns uses wax to encapsulate objects and paper onto the painted surface. My collage experimentations with Japanese printmaking paper fuse the disparate elements of painting and printmaking. Making handmade characteristics palpable is reflective of the work of Amer and Johns in this body of work. My experiences working with the elderly have been a foundation for conceptual exploration. The encaustic process allows me to work in layers and explore the physical deterioration of the human body. The outcome is a delicate balance between metaphorical skin, handmade qualities, and the concurrence of the distinct materials implemented.

Strata: Collaging Through Layers

Colin Ruff (Department of Art)

Liz Miller, Faculty Mentor (Department of Art)

Collaging through layers by utilizing the epoxy resin purchased with my grant gave me the chance to explore a physical depth to my canvas. It allowed me to create a large-scale work where elements seem to "float" seamlessly throughout the canvas itself. Un-attainable with any other medium the epoxy allowed me to create this effect and has expanded the materiality of my work, which I will continue to explore.

Political Art of the Black Panther Party: Cultural Contrasts in the Nineteen Sixties Countermovement

Melissa Seifert (Department of Art)

Alisa Eimen, Faculty Mentor (Department of Art)

The Black Power Movement found its beginning in the late fifties with sit-ins and freedom rides, which conveyed a new racial consciousness within the black community in the United States. However, these initial forms of protest were non-violent. The civil rights movement did not see a great deal of violence until nineteen sixty five when Huey P. Newton and Bobby Seale founded the Black Panther Party. Through the pages of the Party's weekly newspaper the *Black Panther*, resident artist Emory Douglas used his drawings to persuade action and vengeance. His work was similar in style to the work of Pop artists Roy Lichtenstein and Andy Warhol. While these artists thrived in the culture of the nineteen sixties, Douglas was widely unpopular, or rather unrecognized, despite what I will argue is an obvious resemblance. In contrast to Douglas' work, critics wanted to see non-resistant ideas portrayed in art. These could be found in the work of Warhol and Lichtenstein. But even when Warhol's work began to convey images of race and violence there was no change in his popularity. This begs a comparison between the popularity of Douglas and Warhol, as they both depicted scenes of violence. Upon comparison, the conclusion that Douglas' art was unacceptable for discriminatory reasons, lack of an influential audience, and also for its subject matter, which transformed the weak protestor into an armed and powerful force, can be reached. Women's role in the Party will also be discussed in comparison to the typical image of the female in the nineteen sixties culture.

Communication Studies, Education Studies, Elementary and Childhood Education, Speech Communications

Can You Hear Me Through the Glass? Understanding Communication and Relationships in World of Warcraft

Grant Anderson (Department of Speech Communication)

Warren Sandmann, Faculty Mentor (Department of Speech Communication)

Crime and Punishment: The Impacts of the Messaging Project on the Abortion Debate

Sarah Walker (Department of Communication Studies)

James Dimock, Faculty Mentor (Department of Communication Studies)

Cross-Cultural Understanding of Philosophies of Pre-Service Teachers

Katelyn McMahon, Anastasiya Horeva, Katie Robb (Department of Educational Studies: Elementary & Early Childhood Education)

Elizabeth Sandell, Faculty Mentor (Department of Educational Studies: Elementary & Early Childhood Education)

*Recipient of Undergraduate Research Conference Large Grant

Use of Global Guidelines Assessment in Early Childhood Education Settings

Cassandra Schmit, Anna Kucherenko, Alexandra Zhykova, Anne Kennedy (Department of Educational Studies: Elementary & Early Childhood Education)

Elizabeth J. Sandell, Faculty Mentor (Department of Educational Studies: Elementary & Early Childhood Education)

You've Got Mail: Identity Perceptions Based on Email Usernames

Laura Pelletier (Department of Speech Communication)

Warren Sandman, Faculty Mentor (Department of Speech Communication)

Impact of Text Messaging on Communication

Heidi Hemmer (Department of Speech Communication)

Daniel Cronn-Mills, Faculty Mentor (Department of Speech Communication)

Experiential Learning and Small Group Dynamics: Working with the Genocide Intervention Network

Krista Monson (Speech Communication)

James Dimock, Faculty Mentor (Speech Communication Department)

Communicating Without Words: The Effectiveness and Future of Purely Visual Advertisements

By Bradford Wakefield (Department of Communication Studies)

James Dimock, Faculty Mentor (Department of Speech Communication)

Can You Hear Me Through the Glass? Understanding Communication and Relationships in World of Warcraft

Grant Anderson (Department of Speech Communication)

Warren Sandmann, Faculty Mentor (Department of Speech Communication)

As the world becomes more connected with the internet, so evolves our methods of communication. One specific medium where methods of communication are combined is online role playing games. In my research project I examined the different modes of communication (text, voice, proxemics) in the mass multiplayer online role playing game (MMORPG) *World of Warcraft*. I examined if and how these different modes of communication affect the creation and deepening of relationships online. The need for social interaction in these online games and improved communication has greatly increased the social networking characteristics of these games. I worked to understand how the use of voice and an avatar along with text each affect how the relationships are formed. In interviewing some frequent *World of Warcraft* players I was able to draw some interesting implications from my research along with more questions for the future.

Crime and Punishment: The Impacts of the Messaging Project on the Abortion Debate

Sarah Walker (Department of Communication Studies)

James Dimock, Faculty Mentor (Department of Speech Communication)

The abortion debate has been raging for more than half a century, and has divided the nation over the issue ever since its beginnings. The arguments have encompassed arenas ranging from women's rights to religious sanctity. In 2006, the National Institute for Reproductive Health launched a campaign called the Messaging Project. This venture has been unlike any other previously run advertising campaign in the recent past, because rather than making a response to the already existing frame of the abortion debate, the NIRH attempts to shift the focus, by concentrating on the real life consequences of laws that make abortion illegal. However, the campaigns somewhat unorthodox approach to the topic has raised questions about the impacts the Messaging Project will ultimately have. This research endeavor focused on those impacts by analyzing the project through the lens of Herbert W. Simons' article *Going Meta: Definition and Political Applications*, published in the November 1994 edition of *The Quarterly Journal of Speech*. Simons' meta move sought to explain how a rhetor works to gain advantage in a debate. Simons' method worked very effectively when applied to the analysis of the Messaging Project, and using the analysis, we could identify the ways that the Project holds impacts for the entirety of debates in all fields, not just abortion.

Cross-Cultural Understanding of Philosophies of Pre-Service Teachers

Katelyn McMahon, Anastasiya Horeva, Katie Robb (Department of Educational Studies: Elementary & Early Childhood Education)

Elizabeth Sandell, Faculty Mentor (Department of Educational Studies: Elementary & Early Childhood Education)

This project conducted cross-cultural research concerning the philosophy of education held by teachers in two cultures. This project was part of a partnership between Minnesota State, Mankato and North-Eastern State University in Magadan, Russian Federation. Specifically, a card sorting methodology (known as Q-sort methodology and described by Stephenson, 1953) was used to study and identify which of four types of contemporary educational thought are predominant among teachers in two cultures. The data collected were used to identify the beliefs and values (i.e., teaching philosophies) that are most commonly held in each region. The findings will be used to create recommendations for developments and improvements in cross-cultural university partnerships and in pre-service teacher education programs.

Use of Global Guidelines Assessment in Early Childhood Education Settings

Cassandra Schmit, Anna Kucherenko, Alexandra Zhykova, Anne Kennedy (Department of Educational Studies: Elementary & Early Childhood Education)

Elizabeth Sandell, Faculty Mentor (Department of Educational Studies: Elementary & Early Childhood Education)

This study provided opportunity to understand the influence of culture on the learning environments in early childhood classrooms. Student researchers at Minnesota State University, Mankato and at North-Eastern State University collected data with use of the Global Guidelines Assessment (GGA) from the Association for Childhood Education International. The GGA contains 88 items across five early childhood care and education program areas: (a) Environment and Physical Space; (b) Curriculum Content and Pedagogy; (c) Early Childhood Educators and Caregivers; (d) Partnerships with Families and Communities; and (e) Young Children with Special Needs. Investigators combined data from both countries and analyzed the information according to cultural context, type of early childhood classroom, and characteristics of the data collector (student or teacher). This process also contributed to the development and use of a Russian-language version of the GGA, which ACEI will be able to use world-wide.

You've Got Mail: Identity Perceptions Based on Email Usernames

Laura Pelletier (Department of Speech Communication)

Warren Sandman, Faculty Mentor (Department of Speech Communication)

Do you "know" who is e-mailing you? How do people construct identity when there is no face-to-face communication? This study explores the idea that email recipients use the email username of the sender as a mediated cue to make basic assumptions of the identity of the sender. A total of 215 participants completed self-report surveys asking their perceptions of a fictional work group member including sex, age, race, and work productivity. Most participants were able to create a basic identity of their fictitious group member based solely on their email username.

Impact of Text Messaging on Communication

Heidi Hemmer (Department of Speech Communication)

Daniel Cronn-Mills, Faculty Mentor (Department of Speech Communication)

This study used two focus groups to learn about college students and their use of text messages. All of the students were from the College of Arts and Humanities at Minnesota State University, Mankato. One focus group contained five females and other focus group contained five males. The main focus of this study was to find if text messages displaced face-to-face communication. The results of this study suggest text messages do have a displacing effect on face-to-face communication. But text messaging is not the only technology that has the displacement effect. This study also suggests males and females view text messages differently. The implications of the five themes that emerged are discussed in this study.

Experiential Learning and Small Group Dynamics: Working with the Genocide Intervention Network

Krista Monson (Department of Speech Communication)

James Dimock, Faculty Mentor, (Department of Speech Communication)

Small group dynamics and decision making in small groups is a subject of interdisciplinary interest and study. The purpose of studying small groups is to both understand how groups make decisions and to improve the quality of those decisions including developing leadership skills, understanding the principles of shared leadership, conflict management, and avoiding groupthink. This research project, which began as a classroom assignment in the Fall of 2008, explored learning small group dynamics by developing 'real world' relationships between students in the classroom and an area nonprofit group, the Minnesota Genocide Intervention Network. Students learned the principles of small group dynamics while working with the Minnesota GIN in furtherance of their mission to "educate, advocate, and donate" in order to end and prevent genocide.

Communicating Without Words: The Effectiveness and Future of Purely Visual Advertisements

By Bradford Wakefield (Department of Speech Communication)

James Dimock, Faculty Mentor (Department of Speech Communication)

In 2005 Marthe and Francois Girbaud created an advertising campaign that not only differed from any other advertisement released but held the potential to revolutionize the schema of advertising. The advertisement depicts a distorted view of Leonardo da Vinci's *Last Supper* painting where Christ and the Apostles are replaced by female figures. The campaign is analyzed through the comparison of J. Anthony Blair's article entitled: *The possibility and actuality of visual arguments* published in *Argumentation and Advocacy* in 1996. Themes from the original painting are reinterpreted to present not only controversial, but conflicting elements that effectively change the meaning of da Vinci's original piece. This purely visual campaign garnered the attention of the Catholic Church and marketing and fashion industries. Even though the advertisement generated so much attention from the Catholic Church that the institution responded with legal action, the world media gave surprisingly little attention to the advertisement, leaving it up to the researcher to determine its potential success or failure had it been fully released. This rhetorical analysis discusses the Girbaud Last Supper campaign and the ways in which it would have succeeded and failed in influencing both the consumer and the advocate.

Anthropology, History, Psychology, Economics and Speech Communications**Gender Differences in Symptoms of Anxiety, Depression, Hyperactivity and Conduct Problems among Children Ages Eight to Fourteen**

Jenna M. Schley (Department of Psychology)

Sarah Sifers, Faculty Mentor (Department of Psychology)

Elderly Attitudes Toward Exercise

Kari Ek (Department of Psychology)

Daniel Houlihan, Faculty Mentor (Department of Psychology)

Do They Hear You Now? Effectiveness of a Social Norm Mass Media Campaign on a Rural Campus

Jessica Appel (Department of Psychology)

Dawn Albertson and Emily Stark, Faculty Mentors (Department of Psychology)

*Recipient of Undergraduate Research Conference Small Grant

Cluster B Personality Disorders Separated by Gender Expectations

Brianna Kloss (Department of Speech Communication)

Rachel M. Droogsma, Faculty Mentor (Department of Speech Communication)

Effects of Adultism on Youth in Social Movements

Megan P. Evans Martinson (Department of Speech Communication)

James Dimock, Faculty Mentor (Department of Speech Communication)

Sovereignty and National Identity In Regards To The Palestinian-Israeli Conflict

Mohamed R. Seck (Department of Anthropology and International Relations)

Dr. Kathryn J. Elliott, Faculty Mentor (Department of Anthropology and International Relations)

Technology and the Changing Role of Therapy Managers in Africa

Christopher Wright (Department of History)

Agnes Odinga, Faculty Mentor (Department of History)

Sports Franchise Valuations

Anthony Brown (Department of Economics)

Phillip Miller, Faculty Mentor (Department of Economics)

Gender Differences in Symptoms of Anxiety, Depression, Hyperactivity and Conduct Problems Among Children Ages Eight to Fourteen

Jenna M. Schley (Department of Psychology)

Sarah Sifers, Faculty Mentor (Department of Psychology)

The purpose of this study was to investigate whether gender differences were found in anxiety, depression, hyperactivity, and conduct problem symptoms among children ages eight to fourteen. Data was collected from 105 participants using a demographic questionnaire and the Behavioral Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004). Parent-report was used to determine the externalizing symptoms (hyperactivity and conduct problems) of the children studied while self-report was used in detecting internalizing symptoms (anxiety and depression). Past research has shown that girls are more likely to express symptoms of internalizing disorders and less likely to express symptoms of externalizing disorders than boys. The results of this current study found females to possess more anxiety symptoms, $F(1, 97)=3.984, p=.049$ and depressive symptoms, $F(1, 97)=4.295, p=.041$ than males. No significant gender differences were found regarding the symptoms of ADHD, $F(1, 102)=.005, p=.005$ and conduct problems, $F(1, 102)=.812, p=.370$. Future implications for these results are discussed.

Elderly Attitudes Toward Exercise

Kari Ek (Department of Psychology)

Daniel Houlihan, Faculty Mentor (Department of Psychology)

This project's purpose was to gain more knowledge and understanding of why elderly people, as a whole, do not tend to exercise regularly, whereas the benefits for them to do so are significant. Researchers distributed a survey to elderly people in assisted living facilities that measured the attitudes of elderly people toward exercise. Participants were asked to fill out the survey, which took no longer than 30 minutes to complete while the researcher was present to assist. Individuals with severe cognitive deficits or individuals who are incapable of giving informed consent were excluded. The survey consisted of questions pertaining to actual involvement in exercise, for example how many times a week they exercise. Some questions pertained to preferences for time of day they exercise and what types of exercise they prefer. Other questions included about barriers to exercising, such as a lack of energy or inadequate space in order to exercise.

Cluster B Personality Disorders Separated by Gender Expectations

Brianna Kloss (Department of Speech Communication)

Rachel Droogsma, Faculty Mentor (Department of Speech Communication)

Criticisms of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association [APA], 2000), the most widely recognized system for classification of psychological disorders in the U.S., including gender discriminating disorders and diagnoses, have existed for all editions of the DSM. Arguably, gender construction has a profound influence on the standards and evaluation of normal and abnormal behaviors. Concern for the presence of gender bias of personality disorders has been raised, in part, by the frequent diagnoses made according to gender stereotypes. The DSM-IV-TR characterizes personality disorders as marked distress and impairment caused by persistent and inflexible thoughts and behaviors that deviate from cultural norms (APA, 2000). Disorders are categorized into three clusters: (A) odd or eccentric, (B) dramatic, emotional, or erratic, and (C) fearful or anxious. With a specific focus on cluster b personality disorders (Antisocial, Borderline, Narcissistic, and Histrionic), I conducted a rhetorical analysis to evaluate evidence of consistency with, or deviation from, gender expected behaviors: four masculine and four feminine expectations, explicated by Wood (2007). Similar underlying characteristics of criterion between disorders were masked by differences of gendered behaviors, i.e. impulsivity, which has been defined differently across the gendered disorders. Disorders were then compared based on similarity of diagnostic characteristics, level of gender consistency, and the prevalence and frequency of gendered diagnoses. Adopting a multidimensional approach for the diagnosis of personality disorders would be more comprehensive and would accommodate for individual human differences and support the development of new treatments.

Do They Hear You Now? Effectiveness of a Social Norm Mass Media Campaign on a Rural Campus

Jessica Appel (Department of Psychology)

Dawn Albertson and Emily Stark, Faculty Mentors (Department of Psychology)

During the Fall of 2007, several fatalities occurred which were perceived to be alcohol-related and created a community and campus demand for action toward improving student drinking choices. In response to this demand, a low visibility safe-drinking campaign that had been on campus since 2006 was elevated to a full-blown social norm mass media campaign. Blane and Hewitt (1980) argue that social norm mass media campaigns effectively alter knowledge base and occasionally attitudes, but rarely alter behavior, while Whitehead (1979) found that poor implementation often leads to campaign failure. The goal of this project was to determine if the campus social norm mass media campaign altered MSU student drinking behaviors and attitudes toward alcohol, and, if not, possible causes for limited campaign success.

Effects of Adultism on Youth in Social Movements

Megan P. Evans Martinson (Department of Speech Communication)

James Dimock, Faculty Mentor (Department of Speech Communication)

'Adultism' is a term which denotes attitudes and behaviors based on the assumption that adults are superior to young people. This presumption of superiority and the subsequent political marginalization of youth is common in today's culture and affects young people socially, academically and legally. Little research has been done to highlight this problem. This paper is a reflection upon the existing research in adultism in the context of the researcher's experience as a social activist. The research concluded that youth who participate in social movements face challenges in the social, academic, and legal spheres and demonstrated that the largest barrier to the success of socially conscious youth is adultism. It is hoped that this research will not only contribute to the body of research relative to adultism and developed strategies which can be employed to combat discrimination against and the marginalization of the youth.

Sovereignty and National Identity In Regards To The Palestinian-Israeli Conflict

Mohamed R. Seck (Department of Anthropology and International Relations)

Kathryn J. Elliott, Faculty Mentor (Department of Anthropology and International Relations)

Since Israel's establishment as an independent state in 1948, the social and political currents of Israel and Palestine have been a constant source of debate, and the borders of Israel and Palestine have been a cataclysmic junction in the Middle East. The societal conditions of both Palestinians and Israelis have sparked questions among social scientists, concerning both the major sources and the nuances of their conflict. The primary focus of this study is the role of national identity and sovereignty in the Palestinian-Israeli Conflict. Sovereignty is a term that describes the right of self-government for inhabitants of a specific territory. The Israeli Occupation has been the world's longest military occupation of the 21st century. Israel controls the borders in both the West Bank and Gaza. The Israeli Occupation has been met with much opposition by Palestinians. The occupation has segregated Israelis from Palestinians, and has been a catalyst for radical nationalist movements. This study was conducted to examine the widely held premise that the establishment of a truly sovereign Palestinian state is requisite for regional stability. Several methodologies were applied in this study. I was able to collect field notes in the West Bank and Israel proper, and to study both Israeli and Palestinian government offices and research facilities in the region. The study will also employ methodologies from several disciplines in the social sciences to support the claims that national identity and sovereignty are at the crux of the Conflict.

Technology and the Changing Role of Therapy Managers in Africa

Christopher Wright (Department of History)

Agnes Odinga, Faculty Mentor (Department of History)

Africans relied exclusively on traditional healing until many embraced western medicine in the nineteenth century. The resulting medical pluralist practices transformed the role of what John M. Janzen, an ethnographer, termed "therapy managers." Therapy managers are a unique part of African medical culture. They form a group that manages the illness and therapy of the sufferer. This duty was typically performed by relatives, or friends and associates, who lived in the vicinity. While scholars have explored the therapy manager's role, they have failed to account for the impact of technology on the composition and role of these individuals. My preliminary oral and secondary research indicate that examining the role of technology in health and healing expands upon Janzen's commonly accepted explanation of therapy managers.

An analysis of interviews with Africans in Minnesota will provide an understanding of the complex role and place of Diaspora therapy managers. Therefore, my research will build upon Janzen's conceptual and theoretical framework by examining the role of African therapy managers in the Diaspora. An in-depth study of the use of communication devices such as cell phones and email, and internet reveals that therapy managers are younger, closer kin and global. This is a departure from Janzen's view that they are older, extended relatives, and localized. This research will contribute to the ongoing discussion on globalization, technology, health and healing in Africa.

Sports Franchise Valuations

Anthony Brown (Department of Economics)

Phillip Miller, Faculty Mentor (Department of Economics)

Looking at the sale of professional sports franchises, there is a plethora of factors that influence selling price. However, the selling price for sports franchises is typically different than the estimated value of the franchise according to the Forbes Magazine. An examination of the difference in the two figures will give an in depth look on what factors make a sports franchise more or less valuable. With critical analysis of these discrepancies, the question regarding the actual value of sports franchises will become clearer. In order to examine the discrepancies of market price and estimated value of sports franchises by Forbes Magazine, a detailed breakdown of the valuations offered by the Forbes Magazine of sports franchises is essential. The most effective way to inspect these valuations presented by Forbes is to research multiple resources on exactly what factors go into the estimated values brought forth by Forbes. Along with a thorough examination of the estimated values of sports franchises in the over a period of time, the actual selling prices of the selected franchises will offer a basis for comparison that will be crucial in explaining these differences.

College of Arts and Humanities, and College of Social and Behavioral Studies

#1 - The Prairie Island Nuclear Generating Plant: Nuclear Racism or Business as Usual?

Melissa Lorentz (Department of Anthropology and International Relations)

Ronald Schirmer, Faculty Mentor (Department of Anthropology and International Relations)

#2 - Impact of Integrating Service Learning and Spanish-speaking Community Health Programs

Bridgette Bernier (Department of Spanish)

Kimberly Contag, Faculty Mentor (Department of Spanish)

#3 - Educational Fiscal Policy and Its Effects on How Our Children Learn: Comparing Minnesota and Illinois

Sally Anne Stenzel (Department of Political Science)

Kevin Parsneau, Faculty Mentor (Department of Political Science)

#4 - Barriers That Children Experience in Being Placed in Adoptive Homes

Julie Nielsen (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

#5 - Consequences for Smoking in a State Treatment Facility

Meredith Hegeman (Department of Social Work)

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#6 - The Impact of an After School Program on Motivation, Performance, and Attendance

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#7 - Comprehensive Sex Education versus Abstinence-Only

Shawna L. Soper (Department of Social Work)

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#8 - Equine Therapy

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#9 - Collateral Sanctions

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#10 - Adolescents in Drug and Alcohol Treatment: Do They Gain Knowledge on Addiction?

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#12 - Second Chance Class: Education and Awareness Prevention

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#21 - Satisfaction of the Referral of Students to an Offsite Special Education Program

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#23 - How to Best Develop and Implement a New Therapeutic Group in an Inpatient Psychiatric Setting with a Diverse Population

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#24 - Brain Gym Exercises: How do they help adolescents throughout their school day?

Samantha Wersal (Department of Social Work)

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#25 - Risk Factors for Students Attending a Sober School in Mankato, Minnesota Prior to Discharge from School: What Are They?

Shannon Riley (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

#26 - School Connectedness and Drug Use

Sarah Burnham (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

#27 - Out of Home Placement and the Impact of Family Group Decision Making

Jessi Hornick (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

The Prairie Island Nuclear Generating Plant: Nuclear Racism or Business as Usual?

Melissa Lorentz (Department of Anthropology and International Relations)

Ronald Schirmer, Faculty Mentor (Department of Anthropology and International Relations)

The Prairie Island Nuclear Generating Plant (PINGP) is the only nuclear power plant in the nation adjacent to a Native American reservation. The history of the power plant up to the present has been fraught with controversy, particularly between Xcel Energy (formerly NSP) and the Prairie Island Indian Community (PIIC). Historical and cultural factors complicate the relationship between the PIIC and Xcel and have led to allegations of racism. This study compared the PINGP to five other power plants in the United States with nearby populations and geographic features similar to the PINGP. The relationship of the power plant to nearby communities was assessed by reviewing public comments to CON and EIS applications, notices of intent, newspaper articles, and lawsuits and by comparing the size of exclusion zones surrounding the power plants. The null hypothesis was that there is no significant difference between the PINGP and power plants adjacent to non-native communities. Differences were measured by size of the exclusion zone, the degree to which the communities are kept informed about the power plant, concerns expressed by the community about the presence of the power plant, and how these concerns are expressed.

Impact of Integrating Service Learning and Spanish-speaking Community Health Programs

Bridgette Bernier (Department of Spanish)

Kimberly Contag, Faculty Mentor (Department of Spanish)

Service learning is an opportunity that is highly valued among students and staff at universities, but rarely available for the majority of students. This project reviews two unique service learning opportunities developed at Minnesota State University, Mankato and how these opportunities to integrate second language Spanish skills and my nursing skills provided valuable learning opportunities for me and others. The first program I examined was a community health experience through the School of Nursing. The program allowed select students to complete their Community Health Rotation in Guiamaca, Honduras. Students gained hands on experience in the most basic of health care, while providing educational and medical services to the people of Guiamaca. The second program was an individualized pilot-project in the area of community health in Mankato. My Spanish service-learning project was to prepare for and participate in a service learning experience at Open-Door Clinic in Mankato, MN where the client population is 33% Spanish-speaking. Both experiences provided opportunities to gain additional experience in practicing community health and Spanish within a clinical setting. My research focused on the impact of integrating service learning and Spanish-speaking community health programs here and abroad and argues for increased opportunities for students.

Educational Fiscal Policy and Its Effects on How Our Children Learn: Comparing Minnesota and Illinois

Sally Anne Stenzel (Department of Political Science)

Kevin Parsneau, Faculty Mentor (Department of Political Science)

First, Minnesota and Illinois educational policies are compared. The main difference is that Minnesota funds their public schools from the state level, while Illinois funds theirs from the local level. Unfortunately, Illinois' fiscal policies lead to districts receiving unequal funding. As one might assume about this funding system, a wealthier district would receive more money, while a poorer district would receive less. Meanwhile, Minnesota strives to achieve equal funding across all districts. Then test scores and graduation rates are compared between the states to reveal if a correlation between funding and achievement levels exist. To further the study, test scores and graduation rates between wealthier and poorer districts in both states are compared as well. In addition, other variable factors for low achievement levels besides funding, such as poverty rates, pupil/teacher ratios, and technology, are accounted for.

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Consequences for Smoking in a State Treatment Facility

Meredith Hegeman (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

It is federal law that smoking is not allowed on a state facility. It is also a policy at a treatment center in rural Minnesota. There have been many issues with this policy at this specific treatment center. Many residents have been caught with cigarettes and or matches/lighters within the past month. There is a consequence for smoking on the unit. This consequence is a 24-hour building restriction, meaning residents have to report in every hour and they are not allowed to exit the facility to go outside. This consequence does not seem to work because the problem is not improving. If the residents at the treatment facility are included in the decision making process about consequences, will they will follow the policies better at the treatment facility? This research project included a questionnaire given to all residents and all of the staff at the particular treatment center in rural Minnesota. The questionnaire asked for recommendations to make the smoking consequence more effective. The project developed a consequence that will be more effective to stop smoking on the treatment center unit.

The Impact of an After School Program on Motivation, Performance, and Attendance

Melissa Grèce (Department of Social Work)

Christine Black-Hughes, Faculty Member (Department of Social Work)

This research is conducted on an after school program that showed an increase attendance, performance, and motivation. The after school program is a time for students to be able to “catch up” on their homework. Before the students attended the after school program the teachers filled out a questionnaire on students’ attendance, performance, and motivation. Then after the program the leaders of the after school program rate the same categories for the student. When the students arrived they completed a questionnaire on attendance, performance, and motivation for the uncompleted coursework. Does the after school program increase the attendance, performance, and motivation in the classroom? The findings showed there is an increase in attendance, performance, and motivation because of the after school program.

Comprehensive Sex Education Versus Abstinence-Only

Shawna L. Soper (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

“Each year in the United States, 800,000 – 900,000 adolescents aged ≤ 19 years become pregnant” (CDC, 2000). In addition “about one in four sexually active teens acquire a sexually transmitted disease every year” (The Power of SADD, 2003). The primary purpose of this study was to develop a comprehensive sex education program for adolescents in a rural Minnesota school district that would assist in reducing the high risk of unintended pregnancies and sexually transmitted diseases. Additional research was to determine if comprehensive sex education was more effective than abstinence-only, as well as, the appropriate grade level to begin effective sex education with the students. In order to conduct the study, a classical experimental design was used. A treatment group of adolescents were randomly selected to participate in a prevention program that focused on comprehensive sex education, lasting over a period of two weeks. The program promoted abstinence-only, but also provided information on sexually transmitted diseases and ways to prevent unintended pregnancies. In addition, a control group was randomly selected to participate in the study. A pretest and posttest was given to measure results. Additional data on the most appropriate and effective grade level to begin sex education was collected through the use of a survey instrument. The instrument was randomly distributed to students and faculty in the middle school (sixth through eighth grade), as well as, high school (ninth through twelfth grade). A comprehensive approach to sex education is a consideration that public schools may want to consider.

Equine Therapy

Tonya Wagner (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

Equine Therapy is an older type of therapy which is showing lots of recent growth. The purpose of this research is to gather the background information on Equine Therapy, where it originated and also to find the short and long term effects. Also the research will talk about the different types of Equine Therapy classes offered. The research conducted is on an anger management Equine Therapy, which is given in Rural Minnesota. A pre test was given to the students attending the therapy and to the parents of the students. A posttest will also be given to them at the conclusion of the therapy sessions.

Collateral Sanctions

Megan Wexler (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

Many people do not know the consequences for entering a guilty plea to the Court. Entering a guilty plea to the Court may bring unintended consequences for the offender in the following areas: employment, housing, or other everyday living situations. In 2007, Minnesota's Legislature focused on several public safety initiatives, but the main focus was to describe the safety of the public after imprisoned offenders return from incarceration to live among the public. Minnesota residents have communicated to the Legislature their concerns regarding ex-offender living in their neighborhoods, so the Legislature created the Collateral Sanctions Committee. The term "collateral sanctions" has a broad definition. "A 'sanction' is a punishment, and a 'collateral sanction' is a punishment that results from a crime, but is not imposed by a judge as part of a criminal sentence." This research project explains the various types of collateral sanctions among Minnesota residents. The most common offenses include: Driving While Impaired (DWI), domestic abuse, and theft. This project provides an overview of the consequences that may occur with these offenses. This research allows the probation officers to better inform their clients on some of the consequences of collateral sanctions after entering a guilty plea.

Adolescents in Drug and Alcohol Treatment: Do They Gain Knowledge on Addiction?

Sara Martin (Department of Social Work)

Chris Black-Hughes, Faculty Mentor (Department of Social Work)

According to the National Institute on Drug Abuse (2008), 82 percent of high school seniors have used alcohol, 50 percent have used marijuana and 9 percent have used cocaine. It also reports that binge drinking almost of high school seniors is 30 percent and of 10th graders is 24 percent. Clients who have attended a treatment program for chemical dependency have learned many key issues in regards to the treatment process and relapse issues. Clients that are entering treatment for the first time lack the insight and education concerning some of these issues. In a research study conducted at an adolescent treatment facility in a metropolitan area of Minnesota, clients receive a significant amount of treatment dealing with these issues. The research study consisted of a pre- and post-test in regards to knowledge gained about chemical dependency. Clients were administered the test at intake and then upon discharge. This is a study sample of convenience. This research project analyzes the students' knowledge prior to admissions in comparison to knowledge gained during treatment.

School Connectedness

Shannon Abel (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

The purpose of this research is to analyze data that has been previously collected by a local middle school regarding the school's connectedness with the students. The results were analyzed by collecting and examining the grades of previously identified students and their attendance. This is a sample of convenience, the student participants were determined by the middle school staff through the use of surveys that were implemented both in the fall and spring of the 2006-2007 and the 2007-2008 school years. The purposes of the surveys were to discover the number of professionals within the school that connected with the students as self-identified by the students as well as the professionals. Students who reported having connected with five or less professionals were chosen for this research project.

Second Chance Class: Education and Awareness Prevention

Nancy Torres (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

Research has suggested education and awareness has reduced low risk offenders from reoffending. Research was developed and administered toward secondary prevention techniques that were tailored toward a sizeable population. Qualitative research was conducted and 31 participants and 4 parents' voluntarily answered questions pertaining to the material and his or her behaviors. The results indicated the Second Chance Class provided limited information and lacked the ability to provide educational resources.

Family Councils

Amanda Reed (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

This research provides a description of 'family council' in a long-term care facility. Family council is an independent group of family members or friends that at least meet yearly to discuss their concerns and to share their ideas about improvements needed in the long-term care facility. Participants in the family council benefit through participation by altering the care of their loved one, forming a support group, and creating a network of new friends. The major goal of this research was to find ways to increase participation in family councils. The research was completed through quantitative research methods including but not limited to meeting surveys, phone calls, and feedback from members of the family council. The results from the initial survey indicated that the meeting time and day were not convenient for most families.

Where are they now? Caretakers Affect on Children Who Have Been Placed in Foster Care, Relative Care, or in Adoptive Homes

Crysta Lynch (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

The purpose of this research is to identify the affects caretakers can have on a child's future. This research examined all individuals who have been placed in foster care, relative care, or in adoptive homes and have turned 18 in the past five years in three small rural Minnesota counties. This research project involved interviews either by phone, mail, or face-to-face. The interviews consisted of ten questions along with follow-up questions. This was a convenience sample of all the individuals placed in care over the past five years as identified by a rural Minnesota Department of Human Services agency. By identifying the affects that caretakers can have on a child's life, the county DHS agency identified the changes needed to be made within the social service system and continued to provide "evidence based services" to the children placed outside of their original homes.

The Autism Spectrum Disorder Survey: What is Working?

Katie L. Browning (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

A central Minnesota County Social Services Autism Unit understands that the autism spectrum disorder is unique to each child, and it can impact the child's abilities to function independently in many areas. In addition, it may have an impact on family members which can create additional stresses. The Autism Unit is a new and growing service, and would like to know where to go with the services being provided to individuals and their families that are being impacted by the autism spectrum disorder. The Autism Unit understands that families know what they need, and that each family is different in their needs. This Minnesota county agency believes that the individuals and families are the experts in what is going well, identifying service gaps and/or concerns, and suggest what should be developed and happen next with the services and programs provided through this county. To improve services a survey was developed that worked with the individuals and their families on areas such as early identification, issues, concerns and positive aspects of services and programs, the impact autism has on family members, formal and informal supports, case management, financial responsibility and issues, and transition age services. The Autism Unit used the results from this survey to improve their service delivery system, and to guide the planning and further the development of services and programs that address the needs of individuals and families with autism spectrum disorder.

Intake Reports: Who is Reporting Possible Child Abuse and Neglect?

Julia Bauer (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Intake reports are telephone calls, fax, or face-to-face contact with someone reporting a possible child abuse or neglect report. Intake is the first step in many cases because this is how social workers become aware of child abuse and neglect. Once a report is made, it is screened by social workers and discussed to decide if the incident meets the child abuse and neglect criteria. Screened in reports are those that have met the child abuse and neglect format, and screened out reports are those that do not meet child protection criteria. Once a report is screened in, either the family is assessed and offered services (family assessment) or a traditional child protection investigation is completed to determine what further steps need to be done to alleviate the abuse. All of the information that is collected from intake is put into the Social Services Information System (SSIS program) which allows social workers around the state to view intakes on a particular client. Information for this project was gathered through the SSIS program. The information gathered included how many reports were made, whether they were screened in or screened out, and who reported the incident.

“Doubly Disadvantaged?”: The Presidential Candidacy of Shirley Chisholm

Andrea Diekman (Department of Women’s Studies)

Jocelyn Stitt, Faculty Mentor (Department of Women’s Studies)

In order to get their voices heard, groups with different interests and needs, often racially, socially, and economically marginalized groups, must take an active role in developing policies. Political representation is essential in articulating the need for change and then creating that change. However, African American women face a "double disadvantage" in gaining seats as political representatives. Both women and African Americans have different significant problems gaining political office than their male or white, respectively, counterparts do. African American women are especially disadvantaged because of their challenges with the interlocking oppressions of both racism and sexism. While there are many individual examples of the “double disadvantage” African American women face in American political elections, one specific female candidacy was examined in this study. In 1972, Shirley Chisholm was the first black female to run for the Democratic Party nomination for president. She was also the only black and only female candidate competing in the primaries; however both the National Organization for Women (NOW) and the Congressional Black Caucus did not endorse her. Questions sought to be answered in this content analysis research included: Why did NOW and the Congressional Black Caucus both decide not to endorse Chisholm in the 1972 presidential Democratic primary race? How did the chosen language by the media as well as the amount of coverage of Chisholm’s candidacy affect these groups’s choice to not endorse her? A content analysis was conducted to investigate these questions in order to identify areas that change needs to be made in order to increase the number of black women elected to political office.

Role of the Special Review Board, Supreme Court Appeal Panel, and Hospital Review Board in Mentally Ill and Dangerous Court Committed Cases

Jessica Regan (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

There have been many concerns presented by individuals who are committed with a final determination of mentally ill and dangerous (MI/D) and their families regarding the confusion of petitioning the Special Review Board (SRB) and its process. Those who are committed as MI/D must petition to SRB when requesting a transfer to a non-secure facility or requesting a provisional or full discharge. The commissioner must approve this request after the SRB hearing. If denied, the person can appeal to the Supreme Court Appeal Panel (SCAP). Due to the confusion of the two processes, this handout outlined each process to make them more understandable and consistent for both MI/D clients and their families. An additional handout was created to explain the difference between the Special Review Board and the Hospital Review Board. The Hospital Review Board hears complaints from patients and is often confused with the Special Review Board. The two handouts outline each process and their differences in an easy to understand format for both the clients and their family members.

Safe Streets Restored Program: Is this Sentencing Alternative for Offenders Beneficial When Evaluating Recidivism Rates?

Hannah Beckius (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

The purpose of this research is to determine whether the Safe Streets Restored Program is beneficial to the County Community Corrections Agency, as well as beneficial to the offenders enrolled. Safe Streets Restored is a program developed for repeat DWI offenders as an alternative to jail. The research involved determining which of the repeat DWI offenders were sentenced to the Safe Streets Program and from there, which of those offenders have been convicted of other drinking convictions since being placed in the Safe Street Program. The research was conducted using quantitative research methods that will satisfy the measures of evidence based practice.

Comparison and Contraction of Long-Term Treatment Program Between Past and Present Residents in Juveniles Service Center

Sheng Xiong (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

This research project selected ten residents who have received long-term treatment in a Juvenile Service Center. The research explored the positive and negative outcomes for residents who have received long-term treatment after transition. The information gathered was based on qualitative questionnaires and interviews with residents. The findings of the research assisted the community to understand the positive and negative outcomes of transitioning residents.

Satisfaction of the Referral of Students to an Offsite Special Education Program

Samantha Smith (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

A study was conducted to determine the satisfaction of the referral process to an off-site level IV setting located in a suburb in southern Minnesota. Three different groups were either interviewed or provided with an online survey to determine how satisfied they are with the referral process and what changes (if any) need to be made to make the referral process more efficient. The off-site level IV setting serves 6 school districts, which then refer necessary students. The level IV setting provides services to several programs for elementary, junior high and high school students with special education needs. Surveys were created and sent to the districts and the staff at the level IV setting. The special education directors were also interviewed to determine the level of satisfaction. The survey and interview results will be used to assess the referral process forms and guidelines in order to make any necessary changes to meet the satisfaction of the professionals making and receiving the referrals.

How to Best Develop and Implement a New Therapeutic Group in an Inpatient Psychiatric Setting with a Diverse Population

Stephanie Wieland (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Therapeutic groups play a dynamic role in a psychiatric patient's recovery towards stabilization and discharge. Stabilization is the overall goal for a patient in a psychiatric setting in order to be discharged from the facility. Therapeutic groups can help a patient achieve such goal. This research gathered information on successful therapeutic groups from other psychiatric inpatient programs. With the information gathered, a new therapeutic group curriculum was developed and implemented at an in-psychiatric facility. Verbal feedback from patients on their overall satisfaction of the newly implemented group was obtained.

Brain Gym Exercises: How do they help adolescents throughout their school day?

Samantha Wersal (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Brain Gym is a series of simple movements that improve the exercises of whole brain learning. The different types of movements are proven to make all types of learning easier and improve the student's academic skills. The movement developed by Brain Gym allows individuals to access parts of the brain that they previously weren't able to use. The purpose of this research project is gather information about Brain Gym and its use in the classroom. The information gathered from this research project has been developed into a curriculum for use with students who have been diagnosed with Autism Spectrum Disorders.

Risk Factors for Students Attending a Sober School in Mankato, Minnesota Prior to Discharge from School: What Are They?

Shannon Riley (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

The purpose of this research project is to identify risk factors for students attending a Sober School in Minnesota prior to their discharge from the school. Reasons for student discharged from a Sober School in Minnesota were documented. The main focus of the research was on the students who were discharged on negative terms. The hypothesis was that the discharged students still had risks factors that existed, which led up to a discharge. Data was gathered regarding student enrollment during each fiscal school year of the school's operation. Information included whether or not the students participated in social service and/or therapeutic programs. Information was recorded on whether or not the students had a healthy support network outside of the sober school and case management team. This information was gained through assessments, treatment plans, progress notes, and interviews with staff at the school and case management teams. A table was produced for each fiscal school year with the statistical data. The research project shed insight as to risk factors which still existed in the student's lives that were discharged on negative terms.

School Connectedness and Drug Use

Sarah Burnham (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

The increase in teen drug use, low grades and poor attendance in school have made researchers question if there is a connection. It is theorized that the more a student dislikes their school, including their teachers and peers, the higher the risk is of the student engaging in drug activity. Three different classrooms in a rural alternative school were assessed by a survey that asked about their connectedness to the school and their use of drugs along with their grades and attendance.

Out of Home Placement and the Impact of Family Group Decision Making

Jessi Hornick (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Family Group Decision Making (FGDM) is a facilitated, confidential meeting between family members, friends, and professionals. It is designed to provide an environment where the hearts and minds of concerned and knowledgeable individuals are able to examine and prioritize the needs of a child's health, safety, and well-being (Greater Minnesota Family Services, 2009). The research will examine the impact of out of home placement on family group decision making. The data observed the placement of the child(ren) before the FGDM meeting, the outcome of the meeting, as well as, where the child(ren) is/are six months and one year from the family group decision making meeting. The analyzed data showed that Family Group Decision Making produced positive outcome for children and their families.

Automotive Engineering and Technology, Computer Science, and Construction Management

Design, Construction, and Testing of the 2009 Formula SAE Chassis

Eric Crear, Kris Rysavy (Department of Automotive Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive Engineering Technology)

Flex Fuel Retrofit Device Research

Michael Adams, Alex Boser, Ross Haliburton, Keith Igoe, Kenton Johnson, Anton Nasledov,

Alex Palamari, Curtis Wilson (Department of Automotive Engineering Technology)

Bruce Jones, Faculty Mentor (Department of Automotive Engineering Technology)

*Recipient of Undergraduate Research Conference Small Grant

2009 Baja SAE (Society of Automotive Engineers)

Cliff Backler, Alan Dreier (Department of Automotive Engineering Technology)

Craig Evers, Faculty Mentor (Department of Automotive Engineering Technology)

*Recipient of Undergraduate Research Conference Small Grant

Hybrid Development and Diesel Emissions Technology

Jayson Ramthun, Aaron Jackson, Matthew Blaha, Michael Dannenberg, Alex Bellus, David Carroll

(Department of Automotive Engineering Technology)

Bruce Jones, Faculty Mentor (Department of Automotive Engineering Technology)

Vincent Winstead, Faculty Mentor (Department of Electrical & Computer Engineering and Technology)

*Recipient of Undergraduate Research Conference Small Grant

Research of Biogas and its Negative Effects

John Anderson (Department of Automotive Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive Engineering Technology)

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Design, Construction, and Testing of the 2009 FSAE Engine

Nick Adamini, Sarah Friesen, Daryl Green, Jordan Cachiaras, Chris Borge (Automotive Engineering Technology)

Bruce Jones, Gary Mead, Faculty Mentors (Department of Automotive Engineering Technology)

Adding Flex-Fuel Capability to a Passenger Vehicle Engine Using a Do-it-Yourself System

Shizen Shrestha, Saroj Phuyal, (Department of Automotive & Manufacturing Engineering Technology)

Gary Mead, Faculty Advisor (Department of Automotive & Manufacturing Engineering Technology)

Anatomy of a Small Autonomous Vehicle

Joshua Vander Hook, Wade Kallhoff, Mitch Beckman (Department of Computer Science)

Steven Case, Faculty Mentor (Department of Computer Science)

General Contractors' Awareness and Participation in Sustainable Construction Practices

Awale Hussein Awale, Mike Franks, Shirley Hu (Department of Construction Management)

Scott Fee, Faculty Mentor (Department of Construction Management)

Design, Construction, and Testing of the 2009 Formula SAE Chassis

Eric Crear, Kris Rysavy (Department of Automotive Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive Engineering Technology)

Formula SAE (Society of Automotive Engineers) is a collegiate design competition in which hundreds of student teams design, build and compete in a small, open-wheel racecar. The purpose of the competition is to engage students in a “real life” engineering project. The main goal of any chassis team is to build a strong, light and stiff chassis. One way we worked to accomplish this goal was to incorporate composite materials into the chassis. Fiberglass/Nomex panels were fit into the open sections of the car to create stiffening or “shear” panels. These panels are very stiff and added to the chassis’s torsional rigidity. This design did not follow FSAE rules so we needed to prove structural equivalency between our design and the SAE spec frame. Several methods were used to prove equivalence, including Finite Element Analysis computer modeling. Due to the complexity of the frame design and materials involved, the software was not able to accurately test our rendered models. Physical modeling was the only way to generate accurate results. Two replicas of the lower frame rails were built; one exactly to SAE rules, and one with our design variation and the shear panels. Both of these test pieces were crushed on a machine to test their strength. This is the first year that MSU has incorporated composites as a structural member of the chassis. Our research and testing has shown that the composites had greatly improved the mechanical aspects of the systems where they were used.

Flex Fuel Retrofit Device Research

Michael Adams, Alex Boser, Ross Haliburton, Keith Igoe, Kenton Johnson, Anton Nasledov,

Alex Palamari, Curtis Wilson (Department of Automotive Engineering Technology)

Dr. Bruce Jones, Faculty Mentor (Department of Automotive Engineering Technology)

With the rise in fuel prices, a number of consumers are searching for a feasible alternative to gasoline fuel. Ethanol is one available alternative. Flex Fuel Retrofit Kits offer the ability to utilize E85 (composed of up to 85 percent ethanol and 15 percent gasoline) in consumer vehicles. These retrofit kits are an alternative to factory produced flexible fuel vehicles since they can be used to modify existing vehicles. This project encompassed testing 3 styles of such retrofit kits. The kits were installed on a vehicle and tested for drivability, OBD II compliance, emissions, and fuel economy. The test results were analyzed for statistical significance and the advantages and disadvantages of each kit were weighed.

Hybrid Development and Diesel Emissions Technology

Jayson Ramthun, Aaron Jackson, Matthew Blaha, Michael Dannenberg, Alex Bellus, David Carroll
(Department of Automotive Engineering Technology)

Bruce Jones, Faculty Mentor (Department of Automotive Engineering Technology)

Vincent Winstead, Faculty Mentor (Department of Electrical & Computer Engineering and Technology)

As a result of environmental issues, the demand for smaller, more fuel efficient vehicles is on the rise. High efficiency diesel vehicles that are able to meet emissions standards in the United States would be an asset in combating global emissions. Along with a small, high efficiency diesel engine, a hybrid assist system would greatly reduce the carbon foot print of any vehicle. For this project, the vehicle chosen was a Smart ForTwo CDi. A plan was then formulated to incorporate emissions related after treatment to meet Tier 2 Bin 5 standards and incorporate a parallel hybrid drive system. By measuring emissions and making modifications to the exhaust system, in addition to applying a hybrid drive system to the Smart car, the fuel efficiency can be further improved. With small, commuter cars like the Smart ForTwo CDi being utilized in large, urban cities across the country congestion as well as pollution can be significantly reduced, especially when used in conjunction with the proposed exhaust after treatments and hybrid drivetrain.

2009 Baja SAE (Society of Automotive Engineers)

Cliff Backler, Alan Dreier (Department of Automotive Engineering Technology)

Craig Evers, Faculty Mentor (Department of Automotive Engineering Technology)

The project objective was to design a vehicle to be entered into the 2009 SAE Baja competition. The focus was to build a single-passenger off-road vehicle as small and lightweight as possible within the design parameters. Strength and durability were important factors that could not be sacrificed in the design of the vehicle. In addition, the vehicle needed to maintain solid performance, safety, reliability, and efficiency. The vehicle was designed, fabricated and built at Minnesota State University, Mankato and testing was performed at a local organized facility. The vehicle design was broken down into six major components: chassis, suspension, vehicle controls, drivetrain, wheels and tires, and ergonomics. The goal of each group was to research a variety of options and create a decision matrix to determine the best design to incorporate into the vehicle. Information obtained from testing two previously built vehicles was utilized to set benchmark criteria for this vehicle. Over the course of this project, the team gained hands-on engineering experience, time management, and teamwork skills.

Research of Biogas and its Negative Effects

John Anderson (Department of Automotive Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive Engineering Technology)

This project focused on the use of biogas in generators and the effects it has on the generators. To make biogas, unprocessed cow manure, which is a renewable resource, is collected in a receiving pit. From there, it is sent through many different separators and strainers. Then it is sent into a digester where it is mixed and heated to about 100 degrees F. Next, the bacteria convert the volatile fatty acids produced in the heating and mixing stage into a biogas, which primarily consists of methane (CH₄) and carbon dioxide (CO₂). The gases are collected and used for fuel to run three generators. The electricity that is produced is then sold to the local power company and used to power the farm.

Another gas produced from this process is hydrogen sulfide (H₂S). The gas is corrosive. If concentrations of this gas are too high, components in the engine will begin to deteriorate. This shortens the life of the engine and significantly raises maintenance costs. There are a few technologies to lower hydrogen sulfide in the biogas before it is sent into the engine. Two hydrogen sulfide filtration methods were investigated, a bio filter and a bio scrubber. These solutions were researched and a cost/benefit economic analysis between the bio filter, bio scrubber and no treatment was created. This was done to prove which option is the most economical for the life of one generator.

Design, Construction, and Testing of the 2009 FSAE Engine

Nick Adamini, Sarah Friesen, Daryl Green, Jordan Cachiaras, Chris Borge (Department of Automotive Engineering Technology)

Bruce Jones, Faculty Mentor (Department of Automotive Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive Engineering Technology)

The project discusses the Minnesota State University-Mankato Automotive Engineering Technology's involvement in the 2009 Formula SAE competition. The presentation contains the process of researching, designing, testing and building a reliable and powerful engine while remaining in compliance with the Formula SAE rules. The MSU Motorsports team focuses on the development of a Honda F4i engine. The engine is divided into six main components; intake, exhaust, oiling, cooling, fuel and electrical. The main areas of focus this year were creating a wide power band and developing a dry sump oiling system.

Adding Flex-Fuel Capability to a Passenger Vehicle Engine Using a Do-it-Yourself System

Shizen Shrestha, Saroj Phuyal, (Department of Automotive and Engineering Technology)

Gary Mead, Faculty Mentor (Department of Automotive and Engineering Technology)

This project tested the feasibility of adding a Do-It-Yourself (DIY), Mega Squirt system, Electronic Control Unit (ECU) system to a common passenger vehicle engine. The Mega Squirt system can be used on nearly any spark ignition engine and is capable of performing the tasks of almost any modern ECU. We added flex-fuel capability to the system using a GM flex-fuel sensor. The sensor is used to read the alcohol percentage and the temperature of the fuel in the line which will allow us to use any blend of gasoline and ethanol. Also, we added an ability to easily switch the computers from the factory ones to the Mega squirt and vice versa by using a quick disconnect system on the wiring harness. This will allow us to compare the performance of the computers on the engine. Finally we tested the efficiency of the new ECU compared to the old one, and attempted to determine the maximum emissions reduction and fuel economy gains we can achieve using this low-cost conversion. Therefore by performing this low-cost conversion, there is a great possibility to improve the efficiency of any engine that has a carburetor or any other old fuel system as well as adding flexibility of the fuel that we use.

Anatomy of a Small Autonomous Vehicle

Joshua Vander Hook, Wade Kallhoff, Mitch Beckman (Department of Computer Science)

Steven Case, Faculty Mentor (Department of Computer Science)

The MSU Mobile Robotics Club built a miniature, fully-autonomous vehicle for a nation-wide competition in Boulder, Colorado. The competition was inspired by the 2004 DARPA grand challenge, and involved automating a small vehicle to circumnavigate the exterior of a building. The requirements state that the vehicle must carry all computing devices with it and may not receive external input, except GPS, during the course navigation. At least two components of the vehicle had to be custom made, including devices to facilitate steering and obstacle detection. This presentation focuses on the probabilistic navigation techniques, as well as the necessity for obstacle avoidance. We outline the difficulties, accomplishments, and build process.

General Contractors' Awareness and Participation in Sustainable Construction Practices

Awale Hussein Awale, Mike Franks, Shirley Hu (Department of Construction Management)

Scott Fee, Faculty Mentor (Department of Construction Management)

According to US Green Building Council (USGBC), buildings in the United States account for 72% of electricity consumption, 39% of energy use, 38% of all carbon dioxide (CO₂) emissions, 40% of raw materials use, 136 million tons of waste annually, and 14% of potable water consumption. Green buildings can reduce 24%-50% of the energy use, 33%-39% carbon dioxide (CO₂) emissions, 40% of the water use, and 70% of the solid waste (USGBC). Environmental, economic, health and community benefits can be achieved by having sustainable energy and green buildings. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System that was developed by USGBC is the most accepted green building rating system in the United States; the system is practiced among building owners, design professionals and general contractors. In this study, the awareness and participation in the LEED system are being investigated among general contractors in the upper Midwest region of the United States. A survey of 15 questions was sent via email to the members of Associated General Contractors. Phone interviews were also conducted as part of the investigation. The statistical results were analyzed and compared with the results from Dr. Scott Fee's 2005 study. An increase of 23% in awareness and 27% in participation were observed among general contractors in the new study. As the results indicated, more general education and encouragement are needed to increase both awareness and participation among general contractors.

Chemistry, Mathematics, and Statistics

Determination of Structural Polysaccharides and Lignin in Cattail Biomass

Sarita Bhetawal (Department of Chemistry and Geology)

James Rife, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

Expression of 9/13 Hydroperoxide Lyase in Cucumber Leaves

Samee Ranginwala (Department of Chemistry and Geology)

James Rife, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

Differentiable Game Theory and Strategic Decision Making in Business

Austen Rud (Department of Mathematics and Statistics)

*Brian Martenson, Faculty Mentor (Department of Mathematics and Statistics)***On Sign-Solvable Linear Systems and Their Applications in Economics**

Eric Hanson (Department of Mathematics and Statistics)

In-Jae Kim, Faculty Mentor (Department of Mathematics and Statistics)

*Recipient of Undergraduate Research Conference Small Grant

Synchronization of Biological Oscillators

Joshua Wuollet, Jesse Feller (Department of Mathematics and Statistics)

*Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)**Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)***Mathematical Modeling of Tick-Borne Encephalitis in Humans**

Michael Meyer (Department of Biological Sciences) Amanda Kriesel, Geoffrey Peterson (Department of Mathematics and Statistics)

*Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)**Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)*

Determination of Structural Polysaccharides and Lignin in Cattail Biomass

Sarita Bhetawal (Department of Chemistry and Geology)

James Rife, Faculty Mentor (Department of Chemistry and Geology)

Preliminary research in this lab suggested that cattail biomass was a possible resource for the production of cellulosic ethanol. To rigorously assess the economic potential for making ethanol from cattails, Standard Laboratory Analytical Procedures developed by the National Renewable Energy Laboratory were used to characterize the extractives, structural carbohydrates and lignin in cattail leaves. Extractives were determined by using Soxhlet extraction with water followed by ethanol. Initial trials indicated that dried cattail leaves contained 20% water extractives and 6% ethanol extractives. The dried residual solid was autoclaved with 4% sulfuric acid for one hour. The mixture filtered through a filter crucible. The recovered liquid was analyzed for acid-soluble lignins by its uv absorbance and for carbohydrates by high performance liquid chromatography. The recovered solid was analyzed for acid-insoluble lignin and ash gravimetrically.

Expression of 9/13 Hydroperoxide Lyase in Cucumber Leaves

Samee Ranginwala (Department of Chemistry and Geology)

James Rife, Faculty Mentor (Department of Chemistry and Geology)

Fatty Acid 9/13-Hydroperoxide Lyase (9/13-HPL) in the cucumber plant is an enzyme that cleaves either 9- or 13-hydroperoxides of polyunsaturated fatty acids to form volatile C9 or C6 aldehydes respectively. Since these aldehydes may play a role in the plant's defenses against pathogens (K. Matsui, et. al. *Phytochemistry* 67 (2006) 649-657), the enzyme is stress induced during vulnerable times such as when the plant is injured. In order to better understand how this enzyme is induced, we tested the effect of various factors on transcription of the 9/13-HPL gene. We specifically tested factors that have been shown to induce defense responses in other plant systems. Real Time Polymerase Chain Reaction was used to quantitate levels of 9/13-HPL mRNA. In initial experiments, the effect of mechanical wounding of cucumber cotyledons on the transcription levels of the 9/13-HPL gene in wounded tissue and unwounded leaves was examined. In subsequent experiments, the effects of mechanical wounding coupled with treatment with methyl jasmonate, ethylene or norborandiene (an ethylene antagonist), was tested. The RNeasy Plant Minikit from Qiagen was used to isolate mRNA from the plant tissue. SYBR Green was used as the detection system for Real Time PCR.

Differentiable Game Theory and Strategic Decision Making in Business

Austen Rud (Department of Mathematics and Statistics)

Brian Martenson, Faculty Mentor (Department of Mathematics and Statistics)

Game Theory is a branch of applied mathematics often used in the social sciences. Simple games involve two players competing against each other. The goal for each player in a game is to maximize their benefit as much as possible. Game theory attempts to solve and analyze the optimal decisions for each player in order to reach their goal. In discrete game theory, these decisions are taken in turns or in steps. In differential game theory, decisions are made on a continuous basis and each player's optimal (control) strategy is studied. A standard example of differential game theory is the homicidal chauffeur pursuit problem, in which a fast car attempts to catch a slow, but very mobile, person. In this talk, we describe a differential game involving two corporations' advertising strategies. We examine how slight alterations to the rules of the game affect the optimal strategies.

On Sign-Solvable Linear Systems and Their Applications in Economics

Eric Hanson (Department of Mathematics and Statistics)

In-Jae Kim, Faculty Mentor (Department of Mathematics and Statistics)

Sign-solvable linear systems are part of a branch of mathematics called qualitative matrix theory. Qualitative matrix theory is a development of matrix theory based on the sign (-, 0, +) of the entries of a matrix. Sign-solvable linear systems are useful in analyzing situations in which quantitative data is unknown or hard to measure, but qualitative information is known, usually based on theory. These situations arise frequently in a variety of disciplines outside of mathematics, including economics and biology. The applications of sign-solvable linear systems in economics are documented and the development of new examples is formalized mathematically. Additionally, recent mathematical developments about sign-solvable linear systems and their implications to economics are discussed.

Synchronization of Biological Oscillators

Joshua Wuollet, Jesse Feller (Department of Mathematics and Statistics)

Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)

Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)

Many biological systems consisting of a population of oscillators exhibit self-synchronization. In such populations, components that naturally behave periodically respond in some way to oscillations of other components. Each individual has its own natural frequency but is capable of adjusting its frequency according to the frequencies of the other individuals in the population. The phase position of a particular oscillator determines how influential it is on other oscillators via an "influence function". An oscillator's current phase position also determines how sensitive it is to other oscillators according to a "sensitivity function". With the assumption that every oscillator in a population has the same influence and sensitivity functions, we constructed a system of differential equations to model each oscillator's rate of change of phase position. We also assumed a normal distribution of natural frequencies across the population. We found that under certain conditions, large numbers of oscillators become synchronized almost spontaneously. This phenomenon can be seen in some populations of fireflies who synchronize their flashing, in the pacemaker cells of the heart, and in certain types of neurons just to name a few examples. In a sense, we witness the emergence of order out of a chaotic system.

Mathematical Modeling of Tick-Borne Encephalitis in Humans

Michael Meyer (Department of Biological Sciences) Amanda Kriesel, Geoffrey Peterson (Department of Mathematics and Statistics)

Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)

Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)

We have developed mathematical model of Tick-Borne Encephalitis to better understand their phenomena and dynamics. We also have studied the relationship between vectors and their hosts in this disease. This project will show our modeling process and biological understanding through a computer simulation.

Biology and Chemistry

Determining Genetic and Clonal Diversity of *Typha* spp. Using Microsatellites Markers

Monica J. Ngeno (Department of Biological Sciences and Environmental Sciences)

Robert E. Sorensen, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

Determination Of The Antioxidant Potential, Total Phenolic Content and Total Flavonoid Content of *Vernonia Amygdalina*

Cybill E. Okitikpi (Department of Biological Sciences)

Danaé Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

Modeling the Effects of Environmental Influences on the Phenotypic Plasticity of the Tiger Salamander

Ashley Geiger, Monica Ngeno (Department of Biological Sciences)

Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)

Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)

Purification of Isoform Specific Actin Capping Protein Antibodies and Immunofluorescent Studies

Jenna Kastenschmidt (Department of Biological Sciences)

Marilyn Hart, Faculty Mentor (Department of Biological Sciences)

*Recipient of Minnesota State University, Mankato Foundation Grant

Exploring the Potential Reaction between DNA and 5-hydroxymethylfurfural

Teddy Kobingi (Department of Biological Sciences)

Danaé Quirk Dorr, Faculty Mentor (Department of Chemistry & Geology)

Determining Genetic and Clonal Diversity of *Typha* spp. Using Microsatellites Markers

Monica J. Ngeno (Department of Biological Sciences)

Robert E. Sorensen, Faculty Mentor (Department of Biological Sciences)

Cattails are keystone emergent wetland plants that use both sexual and vegetative modes of reproduction. There are three taxa of cattails found in Minnesota. *Typha latifolia* L. the native cattail, *Typha angustifolia* L. an introduced invasive species that is competitively superior to the native cattail species and *Typha x glauca* Godr. a proposed hybrid of the native and exotic cattail species that is considered to be highly sterile. Because hybridization as result of vegetative propagation, is now thought to be an essential factor behind the spread of cattail species in *Typha* in wetlands, the goal of my undergraduate research was to determine the utility of microsatellite genetic markers to assess the level of genetic diversity found among *Typha* individuals of the three taxa at several geographic sites near Mankato, MN. DNA samples from leaf tissue were extracted, amplified by PCR using previous described microsatellite primers and electrophoresed to determine the genotypic and allelic diversity patterns among these individuals. I observed a greater difference in allele frequency of the various typha taxa within a sampled wetland than between the various wetlands. Clonal and intraspecific sexual modes of reproduction were identified to be responsible for the genetic diversity in the sampled wetlands according to analysis of the allelic patterns. This could possibly explain the reason behind the successful propagation of *Typha angustifolia* L consequently abundance in all the wetlands. Further analysis of the three taxa alleles will determine the relative rates of reproduction within and between wetlands, source and sink populations of alleles, and finally colonization patterns of the cattail species.

Determination Of The Antioxidant Potential, Total Phenolic Content and Total Flavonoid Content of *Vernonia Amygdalina*

Cybill E. Okitikpi (Department of Biological Sciences)

Danaé Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

The biological activities of compounds present in *Vernonia amygdalina* (VA) have been the focus of recent investigations. Antioxidants are known to demonstrate anti-carcinogenic, anti-inflammatory and cardio-protective activities as a result of their ability to kill free radicals. Antioxidants are also known to prevent degenerative diseases. Previous studies have also shown that antioxidant compounds contain components such as phenols and flavonoids. The aim of this study was to examine VA to determine its antioxidant activity, its total phenolic content and its total flavonoid content. The samples of VA that were analyzed had been extracted by solvents including ethyl acetate, hexanes, methanol and deionized water. The measure of the antioxidant activity of VA was determined based on the ability of VA to scavenge 2, 2-diphenyl-2-picrylhydrazyl hydrate (DPPH) radicals. Similar tests were carried out on the VA samples to investigate the phenolic content using Folin-Denis reagent and sodium bicarbonate monohydrate. Comparisons were then made between the results and a tannic acid standard curve. For the total flavonoid content, the VA samples were mixed with deionized water, sodium nitrate, aluminium trichloride, and sodium hydroxide. Then, the absorbance was taken and compared to that of rutin. The various solvent-extracted VA samples showed different degrees of activity. Further investigations could be done to isolate the specific antioxidant compounds and to observe their reaction with DNA.

Modeling the Effects of Environmental Influences on the Phenotypic Plasticity of the Tiger Salamander

Ashley Geiger, Monica Ngeno (Department of Biological Sciences)

Anne-Marie Hoskinson, Faculty Mentor (Department of Biological Sciences)

Namyong Lee, Faculty Mentor (Department of Mathematics and Statistics)

Tiger salamanders are commonly found throughout North America. They live in and around ponds, slow streams, marshes, and other wetlands during the spring and fall and dig burrows in prairies, fields, and forests during the dryer months. Tiger salamanders demonstrate polyphenism, which is described as an occurrence of two or more phenotypes within a species whose variation steers development down one pathway or another because of differences that occur in the species environment. Tiger salamanders come in two different immature forms: (1) a typical aquatic larva, and (2) a cannibal form. Typical larvae feed on small pond invertebrates while the cannibal larvae will feed on larger vertebrates including other tiger salamanders. The two types are genetically identical as the cannibal form develops from typical larvae when the social environment becomes suitable for the cannibalistic form. A suitable environment is one in which many salamander larvae live together and the size of larvae vary greatly giving the largest individuals access to an abundant food source and the opportunity to grow larger. Tiger salamanders can recognize their kin and are less likely to develop into cannibals in ponds of relatives. By using competition models and computer simulations, we will be able to use research conducted on salamander populations to compute models that will help us discover density thresholds that can turn a typical larvae salamander into a cannibal.

Purification of Isoform Specific Actin Capping Protein Antibodies and Immunofluorescent Studies

Jenna Kastenschmidt (Department of Biological Sciences)

Marilyn Hart, Faculty Mentor (Department of Biological Sciences)

Actin is a protein that is vital to muscle contraction and cell motility. Actin is synthesized as a monomer and polymerizes into a filament with two very distinct ends; a pointed end and a barbed end. Actin assembly is regulated by a variety of proteins including Actin Capping Protein (CP) that binds the barbed end. CP is composed of an α and a β subunit. In vertebrates, the α subunit has three isoforms: α_1 , α_2 and α_3 and three beta isoforms: β_1 , β_2 and β_3 . The α and β isoforms sequences are very similar in many species, suggesting that the isoforms have specific functions. The α_1 and α_2 specific fusion proteins were prepared and expressed. The proteins were purified and used to produce isoform specific antibodies in a rabbit and a chicken. The antibodies were purified from the serum in the blood using affinity chromatography. I will evaluate the specificity of the antibodies will be evaluated using Western Blot analysis. Protein constructs were prepared, expressed, and purified the proteins. The proteins were used to generate polyclonal antibodies in chicken and rabbit. I propose to use the purified isoform specific antibodies to determine the localization of the α isoforms in murine tissues using immunofluorescence. Tissues from heart, kidney, skeletal muscle, spleen, liver, and lung, will be probed with the antibodies, and tagged with a fluorescent marker.

Exploring the Potential Reaction between DNA and 5-hydroxymethylfurfural

Teddy Kobingi (Department of Biological Sciences)

Danaé Quirk Dorr, Faculty Mentor (Department of Chemistry & Geology)

5-hydroxymethylfurfural (HMF) is a substance that is found in many foods that we consume for example milk, juice and fruits. The purpose of this project was to explore the possibility that HMF may react with the DNA in our cells. DNA is the hereditary material in organisms. Information in the DNA is stored as a code made up of four chemical bases: Adenine (A), Guanine (G), cytosine (C), and Thymine (T). Previous research has shown that aldehydes can react with DNA. HMF is an aldehyde, if an aldehyde reacts with DNA may interfere with the hereditary material and replication. In this project the reaction between HMF and DNA was analyzed by HPLC.

College of Science, Engineering, and Technology and College of Social and Behavioral Science

#1 - Analysis of Pronunciation Variation and Linguistic Structure Using Decision Trees

Tatyana V. Mamchuk (Department of Electrical & Computer Engineering & Technology)

Rebecca Bates, Faculty Mentor (Department of Computer Science)

*Recipient of Undergraduate Research Conference Small Grant

#2 - Effectiveness of Remineralizing Toothpaste on Tooth Decalcification

Dorothy Vo (Department of Dental Hygiene)

Brigitte Cooper, Faculty Mentor (Department of Dental Hygiene)

#3 - Assessing Patients' Risk for Diabetes and Its Relationship to Gingival Disease

Nicole A. DeCourcy (Department of Dental Hygiene)

Angela L. Monson, Faculty Mentor (Department of Dental Hygiene)

#4 - The Nutrition Care Process in a Cardiac Rehabilitation Program

Krista Hagert, Vanessa Steffl, Stephanie Engst (Department of Family Consumer Science)

Susan Fredstrom, Faculty Mentor (Department of Family Consumer Science)

#5 - The Effect of Red Bull Energy Drink on Attenuating Muscular Fatigue Following Heavy Exercise

Amanda Lipetzky (Department of Human Performance)

Robert Pettitt, Faculty Mentor (Department of Human Performance)

#6 - Choosing Between Parametric and Non-parametric Tests

Russ Johnson (Department of Mathematics and Statistics)

Mezbahur Rahman, Faculty Mentor (Department of Mathematics and Statistics)

#7 - Three Dimensional Transient Asymmetric Flowfields in Physical Vapor Transport

Joseph L. Dobmeier (Department of Mechanical Engineering)

Patrick Tebbe, Faculty Mentor (Department of Mechanical Engineering)

*Recipient of Minnesota State University, Mankato Foundation Grant

#8 - Energy Calibration of a Van de Graaff Accelerator

Christopher Prokop, Ryan Wickland, Scott Clarke, Chad Anderson, Arbin Timilsina (Department of Physics and Astronomy)

Andrew D Roberts, Faculty Mentor (Department of Physics and Astronomy)

*Recipient of Undergraduate Research Conference Small Grant

#9 - College Students' Study Habits and Attitudes

Kaley VanDenBerg (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

*Recipient of Undergraduate Research Conference Small Grant

#10 - Gender Responses to Advertising Content in Male vs. Female Magazines

Jessica M. Morales, Heidi C. Doerr (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

#11 - Command Types in the Coach-Athlete Relationship

Kari Ek, Charlotte Hoffmann (Department of Psychology)

Daniel Houlihan, Faculty Advisor (Department of Psychology)

#12 - Cross-Cultural Survey of Rewards: Differences in Levels of Reinforcement Between Adolescents from the United States, Australia, Tanzania, Denmark, and Honduras

Kari Ek, Kendra Homan, B.A. (Department of Psychology)

Daniel Houlihan, Faculty Mentor (Department of Psychology)

#13 - Completing the Triangle: Alcohol Attitudes and Risk-Taking Behavior

Christina Murphy, Danielle Polzin (Department of Psychology)

Dawn Albertson, Faculty Mentor (Department of Psychology)

*Recipient of Minnesota State University, Mankato Foundation Grant

#14 - Activation of Behavioral Trait Inferences: Impression Formation in the Reading Process

Samuel Martin (Department of Psychology)

Karla Lassonde, Faculty Mentor (Department of Psychology)

#15 - Attributions of Team Performance in a Dispersed Environment

Jennifer Mans, Daniel Regnier (Department of Psychology)

Andrea Lassiter, Faculty Mentor (Department of Psychology)

#16 - Are Stereotypes Inherently Negative? Assessing Activation in Memory for Positive and Negative Stereotypes

Amber Scheierl (Department of Psychology)

Karla Lassonde, Faculty Mentor (Department of Psychology)

#17 - Interpersonal Factors Which Influence Life Satisfaction and Health of American College Students

Sahra Ahmed Ali (Department of Psychology)

Vinai Norasakkunkit, Faculty Mentor (Department of Psychology)

#18 - Youth Aging out of Foster Care: Utilizing College Funding Programs among a Rural Community in Minnesota

Shanelle Garbutt (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

#19 - The Use of Teenlect in Adolescents with William Syndrome and Their Typically Developing Peers

Jessica Wandrie, Emily Wallin, Kahlynn Bach, Kelly Olson, Jennifer Worrall (Department of Speech, Hearing, and Rehabilitation Services)

Patricia Hargrove, Faculty Mentor (Department of Speech, Hearing, and Rehabilitation Services)

#20 - Selected Language Skills of Individuals with Fetal Alcohol Spectrum Disorder

Ellen M. Henkelman (Department of Speech, Hearing, and Rehabilitative Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing, and Rehabilitative Services)

#21 - Qualitative Research of Selected Language Skills of Individuals with Aspergers Syndrome

Katherine H. Thayer (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing and Rehabilitation Services)

#22 - Selected Language Skills of Individuals with Aspergers

Amanda Swanson (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing and Rehabilitation Services)

#23 - Qualitative Research of Selected Language, Speech, and Hearing Skills of Individuals with Moebius Syndrome

Sarah A. Spoor (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund and Renee Shellum, Faculty Mentors (Department of Speech, Hearing and Rehabilitation Services)

#24 - Selected Language Skills of Individuals with Fragile X Syndrome

Joelle Johanson (Department of Speech, Hearing & Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing & Rehabilitation Services)

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#31 - Type II Diabetes in African-American Women

Farhia Abdulahi (Department of Community Health)

Amy Hedman, Faculty Mentor (Department of Community Health)

Analysis of Pronunciation Variation and Linguistic Structure using Decision Trees

Tatyana V. Mamchuk (Department of Electrical & Computer Engineering & Technology)

Rebecca Bates, Faculty Mentor (Department of Computer Science)

As automatic speech recognition becomes more heavily used in applications such as computer enhanced dialog systems and automatic dictation, an improved understanding of linguistic structure and the physiology of speech becomes more important. There is great variability in how people speak depending on gender, health, age, geographic origin, and education level. All of this makes it difficult for computers to recognize speech. Typical recognition results for read speech are over 90% accurate, but for spontaneous conversational speech, which has greater pronunciation variation, results reduce to about 70%. This work examined pronunciation variation and different structures of articulatory-feature-based linguistic models to assess their usefulness for speech recognition applications. Articulatory features describe characteristics that distinguish specific speech sounds, or phonemes, and are related to the human vocal tract. Groups of phonemes can share the same features; however, each phoneme has a unique combination of them. The set of features defines a sound and makes it distinguishable from all other sounds. Using the difference between the dictionary pronunciation for words and hand-labeled pronunciations of spoken words, decision trees were built to predict feature changes. Decision trees were used because they give descriptive means for calculating conditional probabilities and help to visualize patterns between different features. Decision tree models were built to represent two different linguistic models and tested using data held out from the training process. While a long-term goal is to improve automatic speech recognition, this work contributes a more detailed understanding of ways to quantify linguistic theory and improve pronunciation modeling.

Effectiveness of Remineralizing Toothpaste on Tooth Decalcification

Dorothy Vo (Department of Dental Hygiene)

Brigitte Cooper, Faculty Mentor (Department of Dental Hygiene)

MI Paste is a topical paste formulated to reverse decalcified areas of enamel. It contains a milk-derived protein that supplements calcium and phosphate naturally contained in saliva. Calcium and phosphate replace lost minerals by infusing into the tooth's surface via a process known as remineralization. The objective of this study was to treat patients with a regimen of acid-etching and MI Paste application to remineralize tooth enamel, as this may improve the appearance of decalcified areas by reducing white spot lesions. Eight patients with decalcified areas of enamel agreed to participate in this study during a four-week period in February 2009. The average participant was 22 years old, Caucasian, and female. They presented to the Dental Hygiene Clinic at Minnesota State University, Mankato for weekly five minute treatments for four weeks. One hundred percent of patients completed treatment (N=8). Homecare instructions given to patients included directly applying MI Paste to decalcified areas at least two times per day, with patients averaging 1.7 daily applications. Pre- and post-treatment photographs reveal 88% of patients demonstrated a decrease in decalcified areas of enamel, resulting in less noticeable white lesions. Seven of twenty-two decalcified areas appeared remineralized. Twelve percent of participants (N=1) did not comply with homecare instructions, resulting in no clinical improvement of decalcified lesions. Findings in this study suggest MI Paste has a positive effect on the appearance of decalcified areas of tooth enamel if patient completes recommended treatment and complies with homecare instructions.

Type II Diabetes in African-American Women

Farhia Abdulahi (Department of Community Health)

Amy Hedman, Faculty Mentor (Department of Community Health)

In my research I examined to see if there is a correlation between the prevalence of diabetes in African-American women and their socioeconomic status, environment, education level, diet and many other factors. I also looked to see if the factors have a significant role in the diabetes cases along African-American woman in the United States. My research also examined if living in the urban areas in inner city America where poverty is a raising issue increases one's chances of getting diabetes, I also looked at the disparities between Caucasian women and African-American women and the cases of diabetes, to see why there is more cases of diabetes in the African-American women population compared to the other races. My research paper is a case study, based on previous studies done the topic. I looked at different studies and research done on the topic compared different finding on the topic and tired drawing my own conclusion from it. I looked to see what individual were considered to be "high risk" for developing diabetes within the African-American women population, and saw that those who were considered at risk did not all get the disease inherently as some studies suggest. My research shows that diabetes is not only a inherited disease a lot of other factors play role in this diseases' prevalence within certain communities, especially within the African-American community.

Assessing Patients' Risk for Diabetes and Its Relationship to Gingival Disease

Nicole A. DeCourcy (Department of Dental Hygiene)

Angela Monson, Faculty Mentor (Department of Dental Hygiene)

The prevalence of diabetes is increasing rapidly, and current research states periodontal disease may be a risk factor for diabetes. The purposes of this study were to determine: 1) the risk for diabetes among patients at a Midwest state university dental clinic, and 2) the relationship between risk level for diabetes and presence of gingival disease. Surveys were distributed to patients seen by senior students at Minnesota State University (MSU), Mankato dental hygiene clinic (N=70). The typical participant was male, 33 years old, exercised 1-2 times per week, and had a BMI of 27.3. Thirty percent of participants were obese, and an additional 34.3% were overweight. Using the American Diabetes Association Diabetes Risk Test, 21.4% of participants scored at high risk for diabetes. Independent t tests revealed no significant differences between patients at high and low risk for diabetes in number of periodontal pockets ($p=.05$) or in gingival inflammation ($p=.79$). This study suggests that the number of periodontal pockets and gingival inflammation are not correlated to the diabetes risk test score. Further research is needed to investigate if the presence of gingival pockets or gingival inflammation is a significant risk factor for diabetes. Dental hygienists would be excellent candidates to screen the public for the risk of diabetes.

The Nutrition Care Process in a Cardiac Rehabilitation Program

Krista Hagert, Vanessa Steffl, Stephanie Engst (Department of Family Consumer Science)

Susan Fredstrom, Faculty Mentor (Department of Family Consumer Science)

The Nutrition Care Process (NCP) involves four steps: assessment, diagnosis, intervention, monitoring/evaluation. It was introduced by the American Dietetic Association in 2003 to standardize how registered dietitians made decisions addressing nutrition related problems. Use of the NCP has been limited to care of individuals, although it is said to be applicable to groups. Nutritional problems fall into three categories: intake, clinical (encompassing labwork, body composition), and behavioral (addresses knowledge, food access, beliefs). We applied steps one and two of the NCP to participants of the Heart Plus Fitness Cardiac Rehabilitation group on the MSU campus. We assessed each subject for nutritional problems and made appropriate diagnoses. Assessment of the subjects included a brief interview for diet, medical history and attitudes and beliefs toward nutrition. Subjects completed the MEDFICTS, a food frequency questionnaire, and anthropometric data (height, weight, waist circumference) was recorded. The patient's recent lipid profile and fasting blood glucose were also reviewed. We then used the data to formulate nutrition diagnoses. We hypothesized that from assessments made, three to four nutrition diagnoses will predominate, indicating the most common nutrition problems of the group. From there, classes were developed to address these nutrition difficulties.

The Effect of Red Bull Energy Drink on Attenuating Muscular Fatigue Following Heavy Exercise

Amanda Lipetzky (Department of Human Performance)

Robert Pettitt, Faculty Mentor (Department of Human Performance)

Red Bull® (RB) is marketed to help people sustain muscular performance. Most research has been confined to exploring the effects of caffeine and not some of the other "active" ingredients (e.g., taurine). **Purpose:** This study investigated the degree to which muscular power was maintained following heavy exercise in which subjects consumed either RB or Control (CTRL) drink containing the same concentration of caffeine. **Methods:** The study was a double-blind, randomized, crossover design. Eight recreationally-trained cyclists completed a graded exercise test to determine power evoking the gas exchange threshold (GET). For each bout, subjects pedaled on an electronically-braked cycle ergometer at an intensity equivalent to the power evoking the GET for 20-min. Digital video was captured for 3 vertical jumps prior to and following the cycling bouts. Knee joint angle was digitized for each frame to obtain joint velocity. The total hip joint displacement and gravitational force on the body was used to derive linear power. These data will be evaluated statistically and the results will be presented.

Choosing Between Parametric and Non-parametric Tests

Russ Johnson (Department of Mathematics and Statistics)

Mezbahur Rahman, Faculty Mentor (Department of Mathematics and Statistics)

A common question in comparing two sets of measurements is whether to use a parametric testing procedure or a non-parametric procedure. The question is even more obvious in dealing with smaller samples. Here, using simulation, several parametric and non-parametric tests, such as, t-test, Normal test, Wilcoxon Rank Sum test, van-der Waerden Score test, and Exponential Score test are compared.

Three Dimensional Transient Asymmetric Flowfields in Physical Vapor Transport

Joseph L. Dobmeier (Department of Mechanical Engineering)

Patrick Tebbe, Faculty Mentor (Department of Mechanical Engineering)

Physical Vapor Transport is a manufacturing process used to produce single crystals of semiconductor materials such as mercurous chloride (Hg_2Cl_2). In the past this time-varying process has been studied with numerical simulation by assuming axi-symmetric three dimensional flow or modeling the flow in two dimensions only. It is generally agreed that neither of these methods accurately represent the true behavior of the process. The purpose of this research was to extend the asymmetric model to three dimensions. The resulting data was then visualized and analyzed. The simulations were performed with a commercially available computational fluid dynamics software package called FIDAP on the 138-processor "supercomputer" here at Minnesota State University, Mankato. The visualization tool used was Tecplot 360. The results have shown that the flowfield is indeed asymmetric and cannot be characterized by a two dimensional simplification.

Energy Calibration of a Van de Graaff Accelerator

Christopher Prokop, Ryan Wickland, Scott Clarke, Chad Anderson, Arbin Timilsina (Department of Physics and Astronomy)

Andrew Roberts, Faculty Mentor (Department of Physics and Astronomy)

MNSU's Van de Graaff accelerator accelerates ionic particles to high speeds and controls their motion. Manufactured by High Voltage Engineering Corporation, the Van de Graaff Accelerator was brought to our university in 1972. After running for 20 years, the operation was discontinued in 1992. In 2006, a project was started to get the accelerator back in running order. We have been successful rebuilding this 400 kV accelerator using the components acquired from an identical machine decommissioned at St. Cloud State University. The primary components have been reassembled, the damaged components and electronics have been repaired and replaced, the vacuum system has been assembled and tested, the ion source controls have been optimized, and the operational safety/interlock systems have been completed and verified. After recent verification of beam current, we have improved beam dynamics and stability to a point where we can run for extended periods of time. The addition of dipole magnet has allowed us to refine energy selection, energy control and particle identification. The main objective of this project was to perform the absolute energy calibration by using the characteristic resonances at 224 and 340 keV from the $^{19}\text{F}(p,\alpha\gamma)\text{O}^{16}$ reaction.

College Students' Study Habits and Attitudes

Kaley VanDenBerg (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

Previous research has found that gain and loss framed messages can be used successfully to motivate health-related behaviors, such as using sunscreen or getting regular mammograms. These messages either emphasize the rewards of engaging in a behavior or the costs of not engaging in the behavior. The current research examines whether or not framed messages can be used to help motivate student behaviors related to academic success, such as increased studying for exams. A gain-framed message would emphasize the benefits to be gained through increased studying time and use of textbook or other resources, whereas a loss-framed message would emphasize the consequences of not studying more or using available resources. Results showed that students with high test anxiety were more motivated by the loss-framed message, whereas those who were more confident in their abilities were more motivated by the gain-framed message. Understanding how to motivate students to improve their study habits and their attitudes towards exams will provide essential and useful knowledge to students, as well as to campus centers (the Center for Academic Success) that work with students on academic topics.

Gender Responses to Advertising Content in Male vs. Female Magazines

Jessica M. Morales, Heidi C. Doerr (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

This experiment was focused on analyzing whether there was a difference in how males versus females respond to advertisements from either men's magazines or women's magazines. The participants were given an Advertisement Experiment Survey which asked them to rate each corresponding advertisement. The participants were asked to answer how likely they were to purchase the products after viewing the advertisement, how appealing they thought the advertisement was, and how well the advertisement caught their attention. Male participants rated the men's magazines higher than the women's magazines and female participants rated the women's magazines higher than the men's magazines for how likely they were to purchase the products, how appealing they thought the advertisement was, and how well the advertisement caught their attention. The results of this study show how magazines subtly target ads by gender, and can help advertising agencies know which types of advertisements to place in either men's or women's magazines.

Command Types in the Coach-Athlete Relationship

Kari Ek, Charlotte Hoffmann (Department of Psychology)

Daniel Houlihan, Faculty Mentor (Department of Psychology)

The purpose of this study was to examine communication within the coach and athlete relationship through looking at various command types verbalized by coaches. The command types consisted of direct and indirect types of commands and they consisted of such varying types as regular, stop, don't, negative, indirect, question, interview, and other. Researchers watched and attended athletic practices and games at high schools surrounding the Mankato area. Two coaches were recruited from Maple River High School in Mapleton, MN. These sporting events included both boys and girls basketball. Commands were recorded by researchers on observation forms during each practice or game. Two researchers observed each practice/game in order to ensure inter-rater reliability. Researchers anonymously analyzed data obtained. Participants were identified by random number, never by name during analysis and will not be identified during presentation of results.

Cross-Cultural Survey of Rewards: Differences in Levels of Reinforcement between Adolescents from the United States, Australia, Tanzania, Denmark, and Honduras

Kari Ek, Kendra Homan, B.A. (Department of Psychology)

Daniel Houlihan, Faculty Mentor (Department of Psychology)

The use of reinforcement (i.e., food, praise, privileges) is an essential component of most behavioral change programs. A recent trend in published research is to assume that certain stimuli are reinforcers for groups of individuals without evidence that this is so. When working with these groups of individuals, determining which stimuli are rewarding for the most individuals in the group can be challenging and time consuming. Past research has also indicated that there is much difficulty in doing behavioral interventions with high school students due to a poor understanding of which rewards are most motivating. This problem is compounded when you try to apply similar interventions across different cultures around the world. The purpose of this research project was to determine what high school students from different regions of the world find rewarding by administering the Survey of Rewards for Teens – 2 (SRT-2) students from the United States, Australia, Tanzania, Denmark, and Honduras. The current researchers found significant differences in the levels of rewards reported by participants based on their cultural identity.

Completing the Triangle: Alcohol Attitudes and Risk-Taking Behavior

Christina Murphy, Danielle Polzin (Department of Psychology)

Dawn Albertson, Faculty Mentor (Department of Psychology)

According to a recent study, over five million college students binge drink at least once every month. A thorough understanding of the factors involved with alcohol use is crucial when trying to successfully reduce risky drinking behaviors in students. Although studies have demonstrated relationships between alcohol attitudes and drinking behavior, as well as risk taking and drinking behavior, this was the first study directly assessing the relationship between risk taking behavior and alcohol attitudes. Two hundred and forty participants from a medium-sized Midwestern university were used in this study. First, participants completed the Balloon Analogue Risk Task (BART), a computer-based assessment that measures an individual's willingness to take risks based on rewards. Next, participants were asked to complete a questionnaire that assessed their thoughts, attitudes, and beliefs toward alcohol before taking the BART once again. We expect risk-taking behavior, as assessed by the BART, to be significantly correlated with more positive attitudes, thoughts, and feelings toward alcohol. If so, a complete triangle would be formed that links alcohol use, risk taking, and alcohol attitudes together. This triangle of knowledge would help to gain a more complete understanding of the factors that influence alcohol consumption and could be used to prevent dangerous drinking behaviors in college students.

Activation of Behavioral Trait Inferences: Impression Formation in the Reading Process

Samuel Martin (Department of Psychology)

Karla Lassonde, Faculty Mentor (Department of Psychology)

When reading text, it is likely that readers make inferences about characters. If a passage is read about Tom who has a lot of friends, it is likely that one would describe Tom as friendly. Describing Tom as friendly would be a behavioral trait inference because it was not explicitly mentioned that Tom was friendly. We were interested in examining conditions in which these inferences are activated while reading. We developed a set of twenty-four passages. Each passage contained a main character that was described in three different conditions: consistent, inconsistent, and neutral. Each of these passages described a specific behavioral trait. Thirty participants enrolled in introductory psychology courses at Minnesota State University, Mankato, read these passages in the three conditions. After each passage, they were asked to write down three words describing the main character. The most frequently reported words were selected as behavioral trait targets for the next part of the study. In this experiment, forty participants read twenty-four passages on a computer screen. Following the last line of each passage, a target word was presented. Participants were asked to name the target word aloud as quickly as possible. The passages were either consistent or neutral with these target traits. Participants' naming time was facilitated for target traits that followed consistent passages but not for target traits that followed neutral passages. This is evidence that behavioral trait inferences were made. These results will be used to further investigate the effects of trait inferences on reading and memory.

Attributions of Team Performance in a Dispersed Environment

Jennifer Mans, Daniel Regnier (Department of Psychology)

Andrea Lassiter, Faculty Mentor (Department of Psychology)

Previous research suggests people tend to make attributions about someone without detailed information about that person. In team performance, individual team members make attributions about the team even when they do not have extensive experience working together. This is often the situation with virtual teams whose members work together in geographically dispersed environments. Little previous empirical research has been conducted regarding attribution, trust, and how these factors affect virtual teams; however, existing theory suggests attributions do influence trust. This study examined the extent to which attributions were related to trust and performance in virtual teams. Data were collected from teams of 40 undergraduate college students who worked together on a problem-solving task. Participants read a simple biography about their team member, which included manipulated information about team member grade point average (GPA). Analyses examined whether such information affected participant trust in the team, performance on the task, and attributions of team performance. Results indicated that attributions of intelligence, manipulated by GPA, did not influence trust or team performance.

Are Stereotypes Inherently Negative? Assessing Activation in Memory for Positive and Negative Stereotypes

Amber Scheierl (Department of Psychology)

Karla Lassonde, Faculty Mentor (Department of Psychology)

The influence of stereotypes on behavior and beliefs has been studied extensively in psychology. Early research of stereotypes made use of primarily explicit measures, which examined overt attitudes. Recent studies have examined stereotypes using implicit measures to avoid social desirability. A series of experiments by Lassonde (2008) examined stereotype activation during reading. Participants read passages in which stereotypes were not directly stated but were likely inferred early-on in the passage. Reading time was slowed for subsequent text in which presented information was inconsistent with the inferred stereotype.

In the current experiment we assessed whether or not activation of stereotypes would vary as a function of whether the stereotype was either positive or negative. Thirty participants from Minnesota State University, Mankato who were enrolled in introductory psychology courses, read twenty-four passages on a computer screen. The passages contained information about a character which was intended to activate a stereotype. This context was followed by a target sentence in which information was either consistent or inconsistent with the inferred stereotype. The time it took participants to read target sentences was measured. The results replicated earlier work; that is, reading time was slowed for target sentences in which presented information was inconsistent with stereotypes when compared to reading time for target sentences containing consistent information. However, reading time was slower for negative inconsistent target sentences than positive inconsistent target sentences. The implication of these results on our understanding of stereotypes will be discussed.

Interpersonal Factors Which Influence Life Satisfaction and Health of American College Students

Sahra Ahmed Ali, (Department of Psychology)

Vinai Norasakkunkit, Faculty Mentor (Department of Psychology)

Previous researches Suh et al. (1998) suggests that the role of internal attributes such as emotions in life satisfaction judgments differ across cultures. Other previous studies have proposed that having large social networks is vital for the mental and physiological well-being and health (e.g., Argyle, 2001). At the same time, many researches have emphasized the importance of social relationships, which have been associated with less stress (House, 1981) and a higher quality of life (Hughes et al., 1995; Schalock, 2000). On the other hand, interpersonal relationship can be the main cause of stress, which can negatively impact the mental and physiological health of the individual (Walen & Lachman, 2000). In the current study we hypothesized that the participation of individuals in online social networking such as, Facebook, MySpace, hi5, Orkut, etc., will not be as strongly related to subjective well-being as the frequency and number of real interpersonal interactions. Also, we expected the relationship between social network and psychological well-being to be moderated by the attachment style of the person. Specifically, the less secure the attachment style, the weaker the relationship between the frequency of social networking and psychological health.

Youth Aging out of Foster Care: Utilizing College Funding Programs among a Rural Community in Minnesota

Shanelle Garbutt (Department of Social Work)

Christine Black-Hughes, Faculty Mentor (Department of Social Work)

This is a quantitative study that focuses on youth who have aged out of foster care in a rural community and the probability that youth will enroll into a postsecondary education. In addition, this study also identifies the probability of using available funding for former foster care youth to help pay tuition in a postsecondary school. This study is conducted through a voluntary participation in an interview guide/schedule. Youth have aged out of foster care and are between ages 19-25. The findings from this study has made rural community agencies aware of the statistics so that agencies can develop a college resource packet for foster youth to increase their knowledge of available funding for them and the steps to enroll in postsecondary education.

The Use of Teenlect in Adolescents with William Syndrome and Their Typically Developing Peers

Jessica Wandrie, Emily Wallin, Kahlynn Bach, Kelly Olson, Jennifer Worrall (Department of Speech, Hearing, and Rehabilitation Services)

Patricia Hargrove, Faculty Mentor (Department of Speech, Hearing, and Rehabilitation Services)

This project investigated teenlect in adolescents with William syndrome. William syndrome is a developmental disability characterized by cognitive impairment and unique strengths and weaknesses in language skills. Speakers with William syndrome “have quite extensive and strong, language expression and acquisition. However, the ability to speak those words, in addition to complications with visuospatial recognition, can be impaired. What is commonly seen, then is a child with advanced vocabulary and a keen skill for grammar, with a poor ability to express speech and a poor ability to perform in areas that involve abstract thinking” (Cadena, 2007).

Our research is focused on teenlect, which is a type of dialect that is used frequently by adolescents. Specifically, we examined the conversations for six targeted words/phrases that are common in teenlect dialogue. These words/phrases are you know, like, cool, whatever, and stuff, or something. We reviewed speech samples of twelve adolescents with William syndrome (WS) and twelve typically developing (TD) peers. The data had been collected and transcribed by previous graduate clinicians who had conversed individually with the participants. The transcriptions were coded so that we would not form any predispositions about the status (i.e., WS or TD) of participants. We analyzed the data by calculating the occurrence of our target words. The results will be discussed in light of the current literature on William syndrome.

Selected Language Skills of Individuals with Fetal Alcohol Spectrum Disorder

Ellen M. Henkelman (Department of Speech, Hearing, and Rehabilitative Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing, and Rehabilitative Services)

This research project explains Fetal Alcohol Spectrum Disorder (FASD) and its affect on individuals’ speech and language skills. The background, history, physical anomalies, and characteristics of FASD were also discussed. With more in depth concentration on speech and language, further descriptions were given on the language comprehension, articulation, and fluency difficulties that individuals with FASD may face. A qualitative research study was done to gain knowledge from the experience of raising a child with FASD. The results of the research were coded and categorized, and final assertions were made regarding the development of individuals with FASD, including their speech and language development.

Qualitative Research of Selected Language Skills of Individuals with Aspergers Syndrome

Katherine H. Thayer (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing and Rehabilitation Services)

This project took an in-depth look at individuals with Aspergers Syndrome (AS). Specific areas of research included language impairment/delay. In addition to researching the background and typical characteristics of AS the project focused heavily on the speech and language aspects associated with the syndrome. This project was completed using qualitative inquiry with a specific case study. The parent of an individual with AS was interviewed. The findings were coded and analyzed to determine underlying patterns and themes. Final assertions were made summarizing the data. This process aided the researcher in understanding the experience(s) of a family with an individual member diagnosed with AS.

Selected Language Skills of Individuals with Aspergers

Amanda Swanson (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing and Rehabilitation Services)

The purpose of this study was to identify the language development and challenges of children with Aspergers syndrome (AS), a diagnosis under the Autism Spectrum Disorders (ASD) umbrella. Information from independent research and qualitative inquiry was compiled by means of a parent interview was conducted to bring forth new insights and a better understanding of the speech and language development of an individual with AS. Following this interview, the results were compiled, analyzed and coded into the main themes or categories. From these themes, assertions and patterns were established. Independent research about AS, the methodology and results of my qualitative research and assertions established upon final analysis of data were outlined in this study.

Qualitative Research of Selected Language, Speech, and Hearing Skills of Individuals with Moebius Syndrome

Sarah A. Spoor (Department of Speech, Hearing and Rehabilitation Services)

Bonnie Lund & Renee Shellum, Faculty Mentors (Department of Speech, Hearing and Rehabilitation Services)

Moebius Syndrome is a rare and congenital condition not widely known to the Speech Language Pathology profession. A diligent study of Moebius Syndrome revealed background information, signs and symptoms, and speech and language difficulties. The research aspect of this project was accentuated through a thorough interview of two parents of a child with Moebius Syndrome. The lack of documented sources prompted the researcher of this study to utilize a qualitative research design. According to David Lancy (1993), "the qualitative paradigm is ideal for phenomena that are patently complex and about which little is known with certainty" (p.9). The interview process laid the groundwork for distinct codes, patterns, and assertions which were displayed. This project familiarized others about an unfamiliar condition.

Selected Language Skills of Individuals with Fragile X Syndrome

Joelle Johanson (Department of Speech, Hearing & Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing & Rehabilitation Services)

This research project involves information regarding an inherited neurodevelopment disability known as fragile X syndrome. Areas researched include background information on the syndrome, behavioral, physical and cognitive characteristics of individuals who have this syndrome. This project has a specific focus on the speech and language characteristics. To supplement the information, the researcher conducted a qualitative study involving a mother of two sons diagnosed with fragile X. The qualitative process included an interview of the mother, transcription of the interview, coding of results, and the identification of categories. Final assertions were made based on the triangulation of the data. The researcher was able to gain knowledge about the experiences from the family of children with fragile X syndrome.

Qualitative Research of Selected Language Skills of Individuals with Cornelia de Lang Syndrome

Kelly E. Olson (Department of Speech, Hearing & Rehabilitation Services)

Bonnie Lund, Faculty Mentor (Department of Speech, Hearing & Rehabilitation Services)

This research was done in order to gain a better understanding of children with Cornelia de Lang Syndrome (CdLS). This project utilized qualitative inquiry with a specific case study. The researcher had the opportunity to interview the father of a child with CdLS. He described his experiences in raising a child with CdLS. The interview was transcribed, coded, and categorized. The researcher was able to learn more about the specific language impairments of a child with CdLS. The triangulation of data resulted in several emergent patterns and a final assertion.

Faculty Beliefs and Attitudes toward Grieving Students

Samuel Aron (Department of Community Health)

Amy Hedman, Faculty Mentor (Department of Community Health)

Students often experience the loss of their loved one and are caught in a grieving process that can range from one day to many days depending on their culture. This grieving will definitely have some effect on the learning process of the student, and thus affects their success. Our plan was to conduct an online survey to a random sample of MSU-Mankato full-time instructional faculty and analyze the following issues: faculty's comfort level discussing death with students and faculty's comfort level referring their students to counseling services. The likelihood that faculty will provide accommodations to grieving students is measured among a sample of college faculty. Faculty's perceptions of students' likelihood to discuss death with them, the relationship between empathy reported among faculty and likelihood faculty will provide accommodations to grieving students were studied. Results from this study indicated that faculty reacted positively toward the grieving student.

Reflections on the Conduct of Research with Human Subjects Across Two Cultures

Kimberly M. Maas (Department of Sociology and Corrections)

Elizabeth Sandell, Faculty Mentor (Department of Educational Studies: Elementary & Early Childhood Education, College of Education)

This study examined the potential benefits, challenges, and barriers faced by university students and research colleagues who were involved in international partnerships for cross-cultural research projects between the United States and Russia. In scholarly investigations in the United States, research subjects must be informed of the precautions that will be taken to protect their safety and their privacy (Amdur, Bankurt 2002). Particularly in Russia, there are no counterparts to the procedures followed by university institutional review boards for working with human subjects. Furthermore, international partnerships have faced new challenges as a result of the restructuring of American security since the events of September 11, 2001. This study focused on trust in international partnership, challenges of funding and institutional support, reliability of data, and the influence of institutions on research processes. Researchers used grounded theory and auto ethnography to code and inductively analyze data from semi-structured interviews and personal experiences in the field.

A New Look at Nonprofit Online Fundraising: Persuasion through the Means of Credibility and Psychological Consistency

Kaytlin M. LeMier (Department of Speech Communication)

Kristen Cvancara, Faculty Mentor (Department of Speech Communication)

A study was conducted to examine how the persuasive elements of a message contribute to non-profit organizations' potential to gain financial support. The purpose of the study was to apply theories of persuasion to advance an understanding of the underlying elements relevant to successful fundraising appeals. The two main constructs examined were credibility and psychological consistency. Applied to the context of non-profit fundraising, credibility refers to the judgments granting institutions and/or donors make about the believability of the non-profit organization or its individual representatives, and psychological consistency refers to donors' internal drive to reduce inconsistencies between their behavior and their beliefs, values, or attitudes. The method of investigation involved a secondary research analysis of existing literature to illustrate how the level of credibility donors associate with an organization is likely to impact the effectiveness of fundraising messages, and to articulate the influence psychological consistency plays in the desire and motivation for donors to support non-profit fundraising efforts. Presented as a professional report, this study reviews the implications of the findings and offers specific ways in which non-profit organizations can improve the effectiveness of fundraising attempts via examples grantwriting and online fundraising campaigns.

The Role of Culture in Context Sensitivity and Social Anxiety

Jaclyn R. Gile (Department of Psychology)

Vinai Norasakkunkit, Faculty Mentor (Department of Psychology)

Studies have suggested that levels of social anxiety are positively correlated with levels of interdependent self-construal and inversely correlated with independent self-construal. The interdependent self-concept (most commonly represented by East Asian cultures) is characterized by the interrelatedness of the individual to others and to the surrounding environment. In contrast to the Independent self-construal (commonly represented by West European and American cultures), the interdependent self-construal fosters higher levels of awareness to contextual surroundings. That is, East Asians are more sensitive to context than are European-American counterparts. Although high sensitivity to context has constituted for social functioning within interdependent societies, the same amount of contextual sensitivity has prevailed as a warning sign for social dysfunction within European-American society. A cross-cultural study was conducted between students from a university in Hyogo, Japan and students from MSU to investigate self-reported levels of social anxiety as it relates to context sensitivity. Results suggested that as context sensitivity is associated with social anxiety among European-Americans, there is no association between context sensitivity and social anxiety among Japanese participants.

Will the Olympics Impact an Individual's Sense of Nationalism as Well as Attitudes Towards the Host Country?

Hassan Mohamed, Samatha Madhavarapu, & Cory Vaske (Department of Psychology)

Norasakkunkit Vinai, Faculty Mentor (Department of Psychology)

The Olympics is often thought to be a time of unity, many nations putting aside their differences and coming together as one. However within the competition we focus on individual differences trying to use the Olympics as a political tool to differentiate ourselves from other countries. This particular study was designed to measure the degree to which the Olympics influenced an individual's sense of nationalism, self concept, and attitude towards the Olympic host country. Through the use of questionnaires and the implicit association test before and after the Olympics, the study attempted to reveal attitude change at both the conscious and unconscious levels. It is hypothesized that the Olympic effect will: 1) increase nationalism, 2) increase positive attitudes towards the host country, and 3) increase the level of interdependence with others in our self-concept. However, it is also predicted that greater changes will occur with conscious attitudes rather than with unconscious attitudes.

Business Law

Employment Background Checks

Eric Lucker, Brianne Sorensen (Department of Accounting), Christopher Swol (Department of Economics), Brittanie Schafer (Department of Human Resources), Eric Nagel (Department of Construction Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

References, Opening the Lines of Communication

Joshua Schultz, Jonathan Elwood (Department of Construction Management), Kristin Ashe, Heather Johnson (Department of Accounting), Leah Kahler (Department of Management and Human Resources), David Lindell (Department of Sports Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

History of Sexual Assaults at MNSU and the Legal Liability for Them

Robert Brommel, Thomas Homan, Nicole Comstock (Department of Human Resource Management), Molly Cunningham (Department of Accounting), Thomas Lyon (Department of Spanish), Tim Hansen (Department of Construction Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

You have been falsely accused of sexual harassment, now what? The top 10 things to consider

Anna Holst, Adam Vortherms, Amanda Wise, Anthony Untiedt (Department of Management)

Angela Larson, Adam Mikelson (Department of Accounting)

Vicki Luoma, Faculty Mentor (Department of Business Law)

The Effects of Title VII of the Civil Rights Act of 1964 on Employers in the Mid-West.

Michelle Reiners (Department of Human Resource Management), Leonette-Ann Riley, Mariel Korton, Melissa Erdman (Department of Accounting), Marissa Baumann (Department of Music Industry), Matt Sayre (Department of Construction Management)

Vicki M. Luoma, Faculty Mentor (Department of Business Law)

False Entrapment

Jenny Starken (Department of Marketing), James Christianson (Department of Finance), John Matheson, Jenny Nass, Jared Andrashko (Department of Management), Ike McWaters (Department of Construction Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

Mankato University On-Campus Penalties for Students Involved in Off-Campus Activities

Scott Trnka, Ray Betts, Mark Robinson (Department of Business Management) Nate Day, Wade Skogstad (Department of Construction Management), Tadd Tepfer (Department of Marketing Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

Identity Theft: The growing problem amongst MSU college students

Kevin Clark, Matthew Dulany (Department of Accounting), Lindsey Rague (Department of Sports Management)

Vicki Luoma, Faculty Mentor (Accounting and Business Law)

Employment Background Checks

Eric Lucker, Brianne Sorensen (Department of Accounting), Christopher Swol (Department of Economics), Brittanie Schafer (Department of Human Resources), Eric Nagel (Department of Construction Management)
Vicki Luoma, Faculty Member, Business Law

Employee background checks have been a controversial issue concerning the rights and limitations of both employers and employees. Our research project goals were to distinguish the boundaries with which both parties are comfortable. The research methods included surveying prospective employers about their position on this issue in light of employment laws and regulations.

References, Opening the Lines of Communication

Joshua Schultz, Jonathan Elwood (Department of Construction Management), Kristin Ashe, Heather Johnson (Department of Accounting), Leah Kahler (Department of Management and Human Resources), David Lindell (Department of Sports Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

In the past, work references have been vague and uninformative because employers fear defamation charges. New laws in Minnesota aim to help employers learn more about their prospective employees by opening the lines of communication during reference checks. This research showed how knowledgeable employers are about these new laws and whether or not they are taking advantage of its benefits.

History of Sexual Assaults at MNSU and the Legal Liability for Them

Robert Brommel, Thomas Homan, Nicole Comstock (Department of Human Resource Management), Molly Cunningham (Department of Accounting), Thomas Lyon (Department of Spanish), Tim Hansen (Department of Construction Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

After the recent sexual assaults on campus, we decided to look further into the history of this issue and how it has affected MNSU's students and the administration. Prior research has shown that colleges can be held liable for sexual assaults that have occurred on campus under Title VII. Our research focused on the frequency of sexual assaults and what action has been taken to address these attacks. Our research examined whether MNSU has been or could have been held liable, as well as what security measures have or will the University take to resolve these issues. We have collected data from various resources including the Minnesota State University, Mankato Security, The Women's Center, and the library, Mankato public library, and the Mankato Police Department.

You have been falsely accused of sexual harassment, now what? The top 10 things to consider

Anna Holst, Adam Vortherms, Amanda Wise, Anthony Untiedt (Department of Management)

Angela Larson, Adam Mikelson (Department of Accounting)

Vicki Luoma, Faculty Mentor (Department of Business Law)

Every company has policies and procedures in place in order to allow company employees a professional work environment, free of harassment. What happens when these rights are abused, and an individual is falsely accused of sexual harassment? Our study provides ten steps that a falsely accused individual should take in order to increase their chances of being acquitted. The research was conducted through interviews of a falsely accused individual, human resource professionals, business employers, and attorneys. Through this presentation we hope to educate individuals on how to protect their professional career if a sexual harassment situation presents itself.

The Effects of Title VII of the Civil Rights Act of 1964 on Employers in the Mid-West.

Michelle Reiners (Department of Human Resource Management), Leonette-Ann Riley, Mariel Korton, Melissa Erdman (Department of Accounting), Marissa Baumann (Department of Music Industry), Matt Sayre (Department of Construction Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

The focus of this research project is centered on the impact of Title VII of the Civil Rights Act of 1964 on three drastically different mid-western-based companies that currently are and were in business prior to implementation of this legislation. To conduct research for the project, our group interviewed sources within human resource departments and other areas from three companies, asking questions regarding the following issues for comparison purposes:

1. The types of changes made in order to comply with Title VII.
2. The costs incurred due to these changes.
3. Impact on employee/employer relations due to Title VII.
4. Suits brought forth in direct relation to Title VII
5. And, conflict between the State of Minnesota's "At-Will" employment laws and adherence to Title VII.

False Entrapment

Jenny Starcken (Department of Marketing), James Christianson (Department of Finance), John Matheson, Jenny Nass, Jared Andrashko (Department of Management), Ike McWaters (Department of Construction Management)

Vicki Luoma, Faculty Mentor (Department of Business Law)

When law enforcement sends underage drinkers, who are specifically chosen to look over 21, into bars is it entrapment? The researchers will examine specific cases in Mankato where law enforcement sends minors who appear to be over 21 into establishments that serve alcoholic beverages to see if they will be served. The researchers will interview parties on both sides of the issue and will examine the law of entrapment. The legal and ethical consequences of such a policy will be considered.

Mankato University On-Campus Penalties for Students Involved in Off-Campus Activities

Scott Trnka, Ray Betts, Mark Robinson (Department of Business Management) Nate Day, Wade Skogstad (Department of Construction Management), Tadd Tepfer (Department of Marketing Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Recently, the administration at Minnesota State University – Mankato expanded their on-campus alcohol policy to include students who are involved in alcohol-related incidents that occur off campus. This action was partly in response to several alcohol related deaths of university students, and partly in an effort to uphold the reputation of the university. The policy has been met with opposition by students, who claim that the University has no legal right to enforce campus rules in an off-campus setting. Administrators claim that students are representatives of the university regardless if they are on campus or off, and therefore are prohibited from partaking in actions which may tarnish the public's view of the university. The goals of the university are wholly positive, but questions have been raised about whether the university is stepping outside the law to achieve their goals. Through our research, we have attempted to analyze the legalities of the administration's policy to determine if the policy should continue to be enforced.

Identity Theft: The growing problem amongst MSU college students

Kevin Clark, Matthew Dulany (Department of Accounting), Lindsey Rague (Department of Sports Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Identity theft is one of the fastest growing crimes in the United States and affects 10 million people nationwide every year. Identity theft, defined as crimes to which someone wrongfully obtains and uses another person's personal data has escalated into a 15 billion dollar industry. We hope through our research that we will be able to better understand the growing problems with identity theft that people pose today so we can help educate other college students on this issue. Our studies will outline the magnitude of this issue amongst MSU students specifically.

Human Performance, Speech Communications, and Women Studies

Perceptions of Female Elite Athletes Posing Semi-Nude or Nude

Alicia J. Johnson (Department of Human Performance)

Cindra Kamphoff and Suzannah Armentrout, Faculty Mentors (Department of Human Performance)

*Recipient of Undergraduate Research Conference Large Grant

Selling Gender: Gender Role Portrayals in Contemporary Magazine Advertisements

Laura Pelletier (Department of Speech Communication)

Daniel Cronn-Mills, Faculty Mentor (Department of Speech Communication)

Performance as Advocacy for Abused Survivors

Megan Rae (Department of Communication Studies)

Rachel Droogsma, Faculty Mentor (Department of Communication Studies)

Tina Fey's Parody of Sarah Palin

April M. Larson (Department of Speech Communication)

Daniel Cronn-Mills, Leah White, James Dimock, Faculty Mentor (Department of Speech Communication)

Comfort Women, Intersectionality and the Importance of Women's Voices

Miho Chisaki (Department of Women's Studies)

Jocelyn Fenton Stitt, Faculty Mentor (Department of Women's Studies)

The Representation of Women in American Western Film and Literature

Jessica Sebold (Department of Women's Studies)

Anne O'Meara, Faculty Mentor (Department of English)

Griots: Transformations in Young Woman of Color

Donna McGhee-Weaver (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

Avra J. Johnson, Interim Asst. VP, Mentor (Department of Academic Affairs)

Sexual Violence Education Programs Presented in Public Schools

Teresa Parker (Department of Psychology and Department of Women's Studies)

Lauren Pilnick, Staff Mentor (Women's Center)

The Influence of Participation in an Aerobic Conditioning Class in College-Aged Students

BreAnna Kruger, Amanda Trost (Department of Exercise Science)

Mary Visser, Faculty Mentor (Department of Exercise Science)

*Recipient of Undergraduate Research Conference Small Grant

Perceptions of Female Elite Athletes Posing Semi-Nude or Nude

Alicia J. Johnson (Department of Human Performance)

Cindra Kamphoff and Suzannah Armentrout, Faculty Mentors (Department of Human Performance)

Considerable sports media research suggests that mainstream media ignores and under-represents women's athletic accomplishments (Kane & Buysee, 2005). When female athletes are represented in the media, an emphasis is placed on their physical attractiveness and heterosexuality (Daddario, 1997). Due to this media focus, researchers report that female athletes feel pressure to "act feminine" while participating in sport, and the media has a negative impact on women's perceptions of their bodies (Kane & Buysee, 2005). Increasingly, elite women athletes are posing semi-nude or nude. Scholars argue the practice demeans female athletes in sport (Kane & Buysee, 2005) and detracts from their accomplishments, yet female athletes who have posed nude or semi-nude argue it provides a way to celebrate the female body (Morrissey, 2008). Fifteen current college female athletes from the swimming, volleyball, and basketball teams were interviewed in order to better understand if college female athletes feel this behavior is acceptable or demeaning, or if it influences their body perceptions. Results revealed that many of the female athletes believed that elite female athletes posing semi-nude in a bathing suit is acceptable, but provocative semi-nude and nude photographs are unacceptable. A majority of the athletes expressed that viewing semi-nude and nude photographs of elite female athletes does not influence their own body perception on or off the playing field. The athletes believed the elite female athletes pose semi-nude or nude due to the influence of monetary compensation for the photographs, being confident about their body, and/or popularizing their name throughout the media.

Selling Gender: Gender Role Portrayals in Contemporary Magazine Advertisements

Laura Pelletier (Department of Speech Communication)

Daniel Cronn-Mills, Faculty Mentor (Department of Speech Communication)

This study presents a content analysis of gender role portrayals and male and female objectification in contemporary magazine advertisements. A total of fifteen magazines were analyzed from a two-month period to determine if gender role portrayals have changed or remained the same as earlier studies. The first analysis looks at product categories most and least often advertised by male or female models. The second analysis looks at the sexual portrayals in magazine advertisement and the rate of objectification of male and female models.

Performance as Advocacy for Abused Survivors

Megan Rae (Department of Communication Studies)

Rachel Droogsma, Faculty Mentor (Department of Communication Studies)

This research project aims to explore theatre as a style of advocacy in raising awareness for violence against woman and promoting social change through audience interaction in improv scenes. After writing scene's that addressed the issues of social victimization, intervention, and sexual violence prevention I selected a small group of actors and directed them for four weeks. On April 21st, the performance will be brought to the public in order to test this theory. Through research in forum theatre, theatre of the oppressed, and advocacy tactics, I will seek to understand how best to create an environment in which all people involved feel motivated to speak out for violence against woman and feel educated through theatrical venues. In watching the progression of the actors involved, observing the success of the performance, and reflecting on my role as an advocate I was examine the results to create an analysis of the effects on society through theatre as a form of advocacy.

Tina Fey's Parody of Sarah Palin

April M. Larson (Department of Speech Communication)

Daniel Cronn-Mills, Leah White, and James Dimock, Faculty Mentors (Department of Speech Communication)

During the 2008 Presidential election, *Saturday Night Live (SNL)* increased viewership by putting a humorous spin on the campaign season and candidates. Governor Sarah Palin, however, was under the most scrutiny by *SNL*. Through the use of Robert Hariman's theory of parodic artistry, this paper rhetorically analyzes how Tina Fey's portrayal of Sarah Palin impacted public perception. The analysis determines that by offering a portrayal just authentic enough to the original, Fey created a powerful counter narrative regarding Palin's identity, and in doing so, the audience may not completely dismiss the ridicule placed on Palin.

Comfort Women, Intersectionality and the Importance of Women's Voices

Miho Chisaki (Department of Women's Studies)

Jocelyn Fenton Stitt, Faculty Mentor (Department of Women's Studies)

During the Asia-Pacific War, a large number of women were forced to work in Japanese military brothels as sex slaves. Women who worked as comfort women are still suffering both physically and psychologically, significantly because the full contexts of their experiences have gone unacknowledged by the Japanese government. Although many of the women want an official apology, the Japanese government has denied its involvement. Specifically, in 2007 the then Prime Minister publicly denied the involvement of the Japanese government, thus erasing comfort women's voices and experiences and their testimonies as official documents. Comparatively, the oppressor and the oppressed have different perspectives regarding the women's agency in their roles as comfort women. However, while comfort women worked as sex slaves during the war, they were discriminated against due to racism, sexism, classism, and other kinds of oppressions by the Japanese soldiers and military personnel. In this research, I examined the Japanese government's system of comfort women and comfort stations, the impact of interlocking systems of oppression on comfort women's lives, and the validity of testimonial narratives/voices as official historical documents. As such, I posited that a feminist analysis of the two main positions on this issue allows for a needed re-visioning of a key historical moment in Japanese and Korean women's history, as well as a validating of women's lived experiences.

The Representation of Women in American Western Film and Literature

Jessica Sebold (Department of Women's Studies)

Anne O'Meara, Faculty Mentor (Department of English)

The American Western genre of film and literature has largely ignored women and people of color in reference to intersectionality while reinforcing stereotypes, whether created by the genre or not. This study included content analysis of Western film and literature in relation to the female and ethnically diverse characters that are depicted in the works and have helped to create the mythological "cowboy" figure. This also included the treatment of women in relation to their socioeconomic background and source of income, as well as their interaction with and relation to the white males who traditionally dominate the genre, such as, but not limited to, Clint Eastwood and John Wayne, as well as the literary characters created by authors such as Larry McMurtry and others. Though the American Western genre has long been considered dead, the revival of such films and literature in recent popular culture has made this research relevant to modern day America and other countries to which this material has been exported. The American cowboy has become an iconic figure, while individuals who largely created the cultural American West, such as Native Americans, Mexicans, and women, have been ignored or marginalized to take on a supporting-role for the white-male, iconic cowboy.

Griots: Transformations in Young Woman of Color

Donna McGhee-Weaver (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

Avra J. Johnson, Interim Asst. VP, Mentor (Department of Academic Affairs)

Traditional means of examining and building self-esteem among young women have often neglected the concept of diversity, historical and artistic contexts – in terms of poetry, music, dance and personal / experiential narratives – and interlocking systems of oppression that have impacted the lives of young women of color. In response to these omissions, my research focused on a pilot program organized around self-esteem building among young women of color and a Paradigmatic Analysis conducted of the functionality and success-fullness of the program. As a program intern, I observed and analyzed the young women's participation, examined and gauged the effectiveness of the various activities, and specifically, investigated the impact of literature, music, and dance produced *by* women of color *on* young women of color in the process of developing a sense of self. Employing a multi-method research format, this project was used to access knowledge, attitudes, experiences, and feelings in women of color from marginalized groups. The research confirmed that such a paradigmatic approach to transformation provided a balance in defining individuals' self-esteem and significantly minimized the influence of oppressions like racism, sexism, and classism on the young women of color.

Sexual Violence Education Programs Presented in Public Schools

Teresa Parker (Department of Psychology and Department of Women's Studies)

Lauren Pilnick, Staff Mentor (Women's Center)

When offered, sexual violence awareness education taught in public schools is minimal and insufficiently reinforced. The programs schools present fail to provide practical information to children and teens at a level that equates the actual offenses committed. This study is a comparative analysis from sexual violence education programs offered at local Mankato public schools. The examination of the programs evaluated thoroughness and messages presented within the curricula, including myths and stereotypes, emphasis on respecting one another, victim blaming and negative media message awareness. The information collected was used to help create an age appropriate, interactive sexual violence education program that is acceptable for youth from elementary throughout the high school level.

The Influence of Participation in an Aerobic Conditioning Class in College-Aged Students

BreAnna Kruger, Amanda Trost (Department of Exercise Science)

Mary Visser, Faculty Mentor (Department of Exercise Science)

The college years are highly influential in shaping adult behavior, especially diet and physical activity. Many college students may not have another opportunity to be educated about the benefits of participation in regular exercise, which is especially important due to the alarming increase in obesity. Currently, 35% of college students are overweight or obese (Mestek et al., 2008). Over 600 students are enrolled in aerobic fitness courses at Minnesota State University, Mankato (MSU) each semester. We determined whether the participation in these classes actually impacts the fitness levels of students who attend regularly. Participants were selected in January 2009 from an aerobic conditioning course if they had a sedentary lifestyle, expressed willingness to attend class regularly and exercised only during class time (N=15-25). Each performed a maximal graded exercise test (GXT) within one week of the start of class and then again at the end of the six week experimental period. Oxygen consumption was measured directly during each test. Student attendance and class participation was monitored carefully. Pre- and post-training VO_{2max} , height, weight, resting blood pressure, resting heart rate, and body mass index were compared to determine whether participation influenced these factors. These results provided valuable information on the short-term physiological impact of a standard format, aerobic fitness class such as is offered at most universities.

Social Work

An Exploratory Study of Hiring Difficulties Among Rural Social Service Staff in Minnesota.

Renee A. Lips (Department of Social Work)

Paul F.E. Mackie, Faculty Mentor (Department of Social Work)

The Cost-Effectiveness of Providing Transportation

Samantha Henrich (Department of Social Work)

Chris Black-Hughes, Faculty Mentor (Department of Social Work)

HIV Support Group Needs Assessment

Jennifer Kolstad (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

What is the Purpose of a Street Outreach Program and How Will it Benefit Lutheran Social Service of Mankato, Minnesota?

Rachel Johnston (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Transition Services for Youth: Are the Services Working?

Ilhan Duale (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

An Exploratory Study of Hiring Difficulties Among Rural Social Service Staff in Minnesota.

Renee A. Lips (Department of Social Work)

Paul Mackie, Faculty Mentor (Department of Social Work)

A convenience sample (N = 94) of rural-based social service supervisors were surveyed using an exploratory design to investigate problems associated with hiring and retaining rural social service staff. Findings suggest that geographic distance from Metropolitan Statistical Areas predicts an increase in difficulty of hiring. Evidence also suggests there is a preference to hire Bachelor of Social Work prepared social workers, and the educational level of staff hired differs significantly from what those supervisors stated they would prefer to hire. Additionally, supervisors were asked open-ended questions about successes and challenges of hiring workers. This information suggests supervisors prefer to hire employees who are familiar with rural environments. Challenges cited include lack of qualified applicants, low wages, and rural agencies being used as employment "stepping stones."

The Cost-Effectiveness of Providing Transportation

Samantha Henrich (Department of Social Work)

Chris Black-Hughes, Faculty Mentor (Department of Social Work)

There are several times a year when patients are discharged from the hospital and they have no transportation home. A hospital in rural Minnesota wants to figure out if it would be more cost-effective to provide and fund transportation or to keep the patient until their own transportation becomes available. Information was gathered on different transportation companies in the community to determine the cost of transportation. Data was gathered for a rural hospital in Minnesota to compare and analyze the cost of keeping a patient after discharge and providing transportation for the patient to return home. This research project explores if it is more cost-effective for a hospital to provide transportation instead of keeping the patient.

HIV Support Group Needs Assessment

Jennifer Kolstad (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

A social services agency that provides services to people living with HIV/AIDS in Minnesota holds monthly support groups to assist in meeting the needs of their clients. The purpose of this research is to determine if the HIV support group is indeed meeting the needs of their clients and to determine if there are any barriers to accessing the support group. A written survey using a Likert scale and additional open-ended questions was mailed to the homes of the clients in the support group's service area. The survey was sent to all clients whether they regularly attend the support group or not. The hypothesis is that there will be needs that are not met and/or barriers to accessing the support group.

What is the Purpose of a Street Outreach Program and How Will it Benefit Lutheran Social Service of Mankato, Minnesota?

Rachel Johnston (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

The purpose of this research project is to present information regarding homelessness in a South Central Minnesota city and a new street outreach program. Youth homelessness is not just a big city issue. Every night approximately 1,800 youth are without a home in Minnesota. Information will be gathered by interviewing an Operations Director and grant writer for this new program. Additional information will also be obtained by doing street outreach; interviewing youth; contacting other counties/agencies with similar programs and evaluating their effectiveness in their communities. Various macro social work theories such as, PREPARE; IMAGINE; Systems theory and Economics Perspective will be utilized and implemented to determine the effectiveness of this program. Services provided to youth through this new program are: youth outreach services; individual and family counseling; connection to community services and life skills education. This research project will help gain the communities support, guidance, kindness and empathy to those who are feeling lost.

Transition Services for Youth: Are the Services Working?

Ilhan Duale (Department of Social Work)

Laurie Strunk, Faculty Mentor (Department of Social Work)

Every year in the United States approximately 20,000 youth “age out” of the foster care system and move into independent adult life (Courtney, M. & Dworsky, A., 2005). In the spring of 2007, Minnesota legislation passed a bill granting an 11 south central counties region 1 million dollars to improve services for children who qualify for children’s mental health services. The South Central Children’s Mental Health Initiative (SCCMHI) was created as a pilot project under this legislation. The SCCMHI was directed to evaluate and plan for service improvement in the following three categories: transition services for youth (ages 16-21), crisis response to mental health needs and integrated services for complex conditions. This research project explains how the transition services were developed and implemented in the 11 county region and discusses the results of the transition services provided to date.

Art

Breaking with Traditions

Matthew Bright (Department of Art)

Todd Shanafelt, Faculty Mentor (Department of Art)

*Recipient of Undergraduate Research Conference Small Grant

Breaking with Traditions

Matthew Bright (Department of Art)

Todd Shanafelt, Faculty Mentor (Department of Art)

In the ceramic arts there has been a long standing tradition, or unwritten rule, that clay must be covered and fired with glaze. Through research and experimentation I wanted to show that with the available materials we have today, we no longer need to be bound to ancient techniques and customs. I was interested in this study because of my own lack of excitement with conventional methods of clay surface treatment. While creating my work I felt I was losing a sense of control once a piece was placed into the kiln. I was interested in a more direct connection with the clay's surface. Art is about the freedom of not having rules or boundaries. The work created through this process will inspire more artists to feel less restricted to the traditions of the ceramic world.

Business Law

Analysis of Underage Alcohol Consumption in Blue Earth County

Ann Kincaid (Department of Business Management) Andrea Bauer (Department of Accounting) Brooke Woitas (Department of Sports Management) Tony Muchow (Department of Construction Management) Amanda Ulfers (Department of Sports Management) Alison Buhler (Department of Accounting & Finance)
Vicki Luoma, Faculty Member (Department of Business Law)

Should the University Have the Right to Punish Students Who Get Caught Drinking Off Campus?

Chris Perry (Department of Business), Chris Gasner (Department of Business), Connor Nelson (Department of Business), Cornelius Cotton (Department of Business), Bryan Jellinger (Department of Business), Cliff Dodge (Department of Business)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Application of Employment At-Will Principles Among College Students

Anthony Seidl (Department of Accounting), Benjamin Traxler (Department of Accounting), Bethany Imdieke (Department of Finance), Brandon Schlichter (Department of Accounting), Brett Thompson (Department of Accounting), Michelle Meurette (Department of Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Freedom of Speech

Jillene Preusser (Department of Marketing) Jason Barnett, Justin Sawyer (Department of Management) Jon Rivers, Jason Goebel (Department of Finance), Jordan Curtiss (Department of Accounting)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Property for Sale

Ana Silva (Department of Business Law), Amber Flaten (Department of Business Law), Amanda Olson (Department of Business Law), Blane Sharkey (Department of Business Law), Brent Forslund (Department of Business Law), Andrew Paik (Department of Business Law)
Vicky Louma, Faculty Mentor (Department of Business Law)

Proposal on How to Tax Motorists

Megan Rynda, Melissa Neal, Megan Hejhal, Matt Wills, Mike Kipke (Department of Business Law)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Analysis of the Legal Responsibilities of Peers in Alcohol Related Injuries or Deaths

Derek Hahn, Derek Nyvold, Elena Shrestha (Department of Accounting) David Reeb, Grace Lee (Department of Marketing), David Smith (Department of Construction Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Analysis of Underage Alcohol Consumption in Blue Earth County

Ann Kincaid (Department of Business Management) Andrea Bauer (Department of Accounting) Brooke Woitas (Department of Sports Management) Tony Muchow (Department of Construction Management) Amanda Ulfers (Department of Sports Management) Alison Buhler (Department of Accounting & Finance) Vicki Luoma, Faculty Member (Department of Business Law)

The Mankato community has become increasingly concerned about underage consumption of alcohol, especially because of recent alcohol related deaths in the area. The Mankato police force and other organizations around the community seem to have taken more drastic measures recently to reduce alcohol consumption by the underage. The goal of our undergraduate study was to investigate the number of minor consumption tickets given out in the Blue Earth County during the years 2003-2008 and determine whether or not these numbers had decreased. Also, we explored other measures not yet taken to lower consumption of alcohol in the county, thus reducing alcohol related deaths.

Should the University Have the Right to Punish Students Who Get Caught Drinking Off Campus?

Chris Perry (Department of Business), Chris Gasner (Department of Business), Connor Nelson (Department of Business), Cornelius Cotton (Department of Business), Bryan Jellinger (Department of Business), Cliff Dodge (Department of Business) Vicki Luoma, Faculty Mentor (Department of Business Law)

This project concerns the Minnesota State University of Mankato's policy of punishing students who get caught drinking alcohol of campus. Included in this presentation is information collected by surveys and interviews of University staff and students. The main focus of this project is to find the legal rights of students and legal perimeter of the college. This information is then collected and a general conclusion is formed and presented.

Application of Employment At-Will Principles Among College Students

Anthony Seidl (Department of Accounting), Benjamin Traxler (Department of Accounting), Bethany Imdieke (Department of Finance), Brandon Schlichter (Department of Accounting), Brett Thompson (Department of Accounting), Michelle Meurette (Department of Management) Vicki Luoma, Faculty Mentor (Department of Business Law)

This project was primarily structured so that there would be better understanding of employment history of college students. For research purposes, a survey of approximately 100 college students asked a number of questions regarding their recent employment history. Within the survey, students were asked the number of jobs they held during college, how many times they have been laid-off, and reasons for being laid-off. After further analysis of the survey, we have made certain conclusions that have allowed us a better understanding of employment patterns among college students.

Freedom of Speech

Jillene Preusser (Department of Marketing) Jason Barnett, Justin Sawyer (Department of Management) Jon Rivers, Jason Goebel (Department of Finance), Jordan Curtiss (Department of Accounting)
Vicki Luoma, *Faculty Mentor (Department of Business Law)*

The freedom of speech is a right granted by the first amendment of the constitution. Citizens of the united State have the absolute right to express freely their ideas and opinions without fear of punishment and government interference. This freedom is an absolute freedom but there are exceptions, individual cannot infringe on another rights. Exceptions include hate speech, defamation, terrorist threats, sexual harassment, and pornography. It can be hard to determine what constitutes as an exception to the first amendment. We surveyed students to better understand the student population's view on the first amendment. In our survey we used a hypothetical case of parents wanting to name their child Adolph Hitler Jones and the city clerk refused to put the name on the birth certificate. We asked a series of questions to determine whether the students found this to be a violation of the first amendment and how far they thought the first amendment should extend.

Property for Sale

Ana Silva (Department of Business Law), Amber Flaten (Department of Business Law), Amanda Olson (Department of Business Law), Blane Sharkey (Department of Business Law), Brent Forslund (Department of Business Law), Andrew Paik (Department of Business Law)
Vicky Louma, Faculty Mentor (Department of Business Law)

One of the most visited websites on the internet today is Facebook. Facebook is a social network where you have your own personal profile including status, pictures, and comments. Information for these different areas was added by the users' as well as others. There were no rules regarding who can provide what information (except copyright laws). This caused issues for the users' when the information could be used in a harmful way. Recently it was brought to users' attention that personal information shared on Facebook is no longer private regardless of privacy settings. Companies, police departments, and school officials may have the ability to view your profile and could discriminate against you. Our research was designed to show whether or not participants know that there is no secure information on Facebook. Our survey shows the percentages of people who were aware of these terms and whether they will continue using Facebook in the same manner. Our presentation reviews our findings and discusses the rights that users of any internet site may want to be aware of.

Proposal on How to Tax Motorists

Megan Rynda, Melissa Neal, Megan Hejhal, Matt Wills, Mike Kipke (Department of Business Law)
Vicki Luoma, Faculty Mentor (Department of Business Law)

There has been a new proposal brought to the public's attention by the United States Transportation Secretary, regarding the taxes that motorists pay. This proposal considers taxing motorists on how many miles they drive, rather than how much gasoline they actually go through. There has been a lot of negative feedback regarding this proposal, and many also feel that is could be a long term solution to help and to benefit the United State's transportation system. This tax, if passed, could help keep the highways up to date, and also keep them as safe as possible. There are many pros and cons that go along with this proposal, and the country's current economic state has a lot to do with it. The public most defiantly has their own opinions about this matter, and many things need to be weighted and considered when deciding on this proposal.

Analysis of the Legal responsibilities of peers in alcohol related injuries or deaths.

Derek Hahn, Derek Nyvold, Elena Shrestha (Department of Accounting) David Reeb, Grace Lee (Department of Marketing), David Smith (Department of Construction Management)
Vicki Luoma, Faculty Mentor (Department of Business Law)

Alcohol related incidents are becoming a growing concern within the University community. There is much controversy of friends who aide and ignore signs of over intoxication. With this paper we hope to explore these legal issues surrounding this problem. By examining cases involving this issue, including the Amanda Jax death here in Mankato, we hope to use real life situations to bring to light legal responsibilities of peers. We will also examine the ethical issues peers face with over intoxication.

Psychology

Peer Pressure & Need for Approval in Social Situations Involving Alcohol

Ashley M. Weaver (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

*Recipient of Undergraduate Research Conference Small Grant

Testing a New Cultural Priming Effect on Self Perception and Spatial Perception

Miwako Fujikata (Department of Psychology)

Vinai Norasakkunkit, Faculty Mentor (Department of Psychology)

Assessment of College Students' Perceptions and Knowledge of Alcohol Before and After Risk-Reducing Drinking Presentation.

Katie Woloszyk (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

Visual Misperceptions Due to Time Constraints

Laura Aldrich (Department of Psychology)

Dr. Jonathan Page, Faculty Mentor (Department of Psychology)

*Recipient of Undergraduate Research Conference Small Grant

Child Resilience and Family Support: Can Parent and Sibling Support Be Harmful for Children in Stressed Family Environments?

Amanda Baker (Psychology)

Sarah Sifers, Faculty Mentor, (Department of Psychology)

Test-Retest Reliability on a Survey Measure of School Psychology Practices

Seth Sorensen, Charlotte Hoffman (Department of Psychology)

Kevin Filter, Faculty Mentor (Department of Psychology)

Peer Pressure & Need for Approval in Social Situations Involving Alcohol

Ashley M. Weaver (Department of Psychology)

Emily Stark, Faculty Mentor (Department of Psychology)

With the rise of alcohol related deaths among Minnesota university students, it is important to examine underlying pressures that may cause a college student to drink. Several studies have shown relationships between peer pressure and alcohol consumption. This study examined the relationship between peer pressure to drink and a student's need for social approval according to the Crowne and Marlow (1960) Scale of Social Desirability. Participants were students from Minnesota State University, Mankato and completed a survey including questions about alcohol consumption, hypothetical social situations involving alcohol, and the social desirability scale. It is hypothesized that the higher a person's need for social approval, the more likely they will give in to peer pressure and drink alcohol.

Testing a New Cultural Priming Effect on Self Perception and Spatial Perception

Miwako Fujikata (Department of Psychology)

Vinai Norasakkunkit, Faculty Mentor (Department of Psychology)

Individuals from different cultural contexts develop different self-construals. Westerners tend to perceive themselves and objects in the world as autonomous entities separate and distinct from others and the environment. Consequently, they are likely to develop more analytic thought patterns. On the other hand, Easterners tend to perceive themselves in a relation to others and the environment, rather than being independent and distinct. Thus, they are likely to develop more holistic thought patterns. In order to experimentally manipulate cognitive frame switching between these modes of thoughts in the laboratory, cultural priming has been used in numerous studies. It allows one to temporarily activate the non-dominant thought patterns to examine its behavioral consequences. For example, Westerners can temporarily activate more holistic thought patterns, whereas Easterners can temporarily activate more analytic thought pattern. However, existing cultural priming methods do not have equal effectiveness for both Westerners and Easterners. The current study tested whether a newly developed priming method, which required both analytic and holistic modes of information processing, had equal efficacy cross-culturally in the frame-switching of both explicit (i.e., conscious) and implicit (i.e., unconscious) values, as well as in basic perceptual styles. Three different groups of participants were examined: 1) Japanese participants in Japan, 2) American participants in the United States, and 3) Japanese biculturals in the United States to see if the new priming method was equally effective across all cultural groups.

Assessment of College Students' Perceptions and Knowledge of Alcohol Before and After Risk-Reducing Drinking Presentation.

Katie Woloszyk (Department of Psychology)

Emily Stark, *Faculty Mentor (Department of Psychology)*

College binge drinking has contributed to an increasing health concern (Kypri & Langley, 2003). This study examines whether or not college students overestimate their peers drinking behaviors and whether or not the students retain the information provided in a Health PRO's presentation aimed for educating students' about alcohol. Professors at Minnesota State University-Mankato sent in a request for a Health PRO's presentation in the classroom. Students enrolled in class are presented with a survey before a Health PRO's presentation and then approximately one week later complete a post-survey. Previous research has found that college students who believe their peers consume more alcohol are more likely to follow those perceived drinking norms (Perkins & Berkowitz, 1986). It is predicted that college students' misperceptions of college drinking behavior will become more accurate after the Health PRO's presentation focusing on reducing risky behaviors related to alcohol.

Visual Misperceptions Due to Time Constraints

Laura Aldrich (Department of Psychology)

Jonathan Page, *Faculty Mentor (Department of Psychology)*

There are many instances when humans are required to make rapid discriminations. For example, in law enforcement, police make snap judgements in high stress situations, such as whether the object in a suspects hand is a cell phone or a gun. In rare instances, an officer will make an error in judgment and shoot an unarmed suspect. This experiment looks at where this recognition error occurs in the visual processing system. Participants were shown a series of chromatic and achromatic circles in two timed conditions: fast (800ms) and slow (1600ms). Targets were circles with vertical stripes, standards had horizontal stripes. Participants could respond correctly by either identifying a target as a target (a hit) or a standard as a standard (a correct rejection). The participant scored an error if they identified a target as a standard (a miss) or responded that a standard was a target (a false alarm). Reaction times were recorded for each response. An electroencephalograph (EEG) also measured brain waveforms to identify response recognition patterns. Our results indicated that there was an increase in stimulus discrimination errors when faster judgements are required and that these errors can be seen in early visual processing stages.

Child Resilience and Family Support: Can Parent and Sibling Support Be Harmful for Children in Stressed Family Environments?

Amanda Baker (Department of Psychology)

Sarah Sifers, Faculty Mentor (Department of Psychology)

Jackson, Sifers, Warren, and Velasquez (2003) found, contrary to much past research, supportive family environment was a risk factor for children exposed to familial stress (e.g. marital divorce, death in the family, financial problems, and more) This study replicated Jackson and colleagues study, examining the relationship between family stress and family support for children. 100 children from public schools and their parents from a Midwestern town were participants in this study. Measures used for this study include the Life Events Checklist, Family Environment Scale and Behavioral Assessment for Children, second edition. These measures were used to run correlation and regression which was predicted to find an interaction between family support and family stress. The results of this study signify that as personal growth increases for the child, adaptive behaviors may increase as well.

Test-Retest Reliability on a Survey Measure of School Psychology Practices

Seth Sorensen, Charlotte Hoffman (Department of Psychology)

Kevin Filter Ph.D, Faculty Mentor (Department of Psychology)

Several studies have investigated school psychologist's time spent carrying out professional activities. Many of these studies have used similar measures that have been assumed to accurately investigate time spent in school psychologist professional practices, but have not previously been validated through psychometric techniques. In this present study, we used test-retest reliability to investigate if the measure used for these data collection purposes is in fact a reliable way of measuring time in professional practices. Two separate surveys of school psychologist professional activities were emailed to school psychologists in the state of Minnesota. Both surveys were constructed of questions wherein respondents report actual time spent and desired time spent in 5 categories of professional practices. These categories included time conducting assessments, interventions, meetings, writing/research, and professional development. Surveys were sent to 60 participants and resent to the same participants 30 days later. Data from this research should determine if the current measure being tested is a reliable instrument for determining time spent carrying out professional practices for school psychologists.

Women Studies

Relationship Violence: Risk Factors for Adolescents

Antoinette Wall (Department of Women's Studies)

Barbara Keating, Faculty Mentor (Department of Sociology)

The Relationship Between Women of Third World Countries and the Environment, the Overlap of Oppression and the Role Ecofeminism is Playing

Melissa Kjolsing (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

Gender, class and globalization: A historical analysis of sweatshops in China and Mexico.

Ann Goldsbury (Department of Women's Studies)

Susan Freeman, Faculty Mentor (Department of Women's Studies)

Mixed Messages: The Contradiction of Dove's Real Beauty Campaign Against Their Better-Aging Products

Meagan Steele (Department of Women's Studies)

Susan Freeman, Faculty Mentor (Department of Women's Studies)

Online Anti-choice Rhetoric: A New Generation, the Same Old Deception.

Emily Dolentz (Department of Women's Studies)

Jocelyn Stitt, Faculty Mentor (Department of Women's Studies)

The Virginal Archetype: Female Representation in the Slasher Film

Shannon Claybaugh (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

Domestic Violence in Relationships

Amber Hansen (Department of Women Studies)

Jennifer Scheman Snell, Faculty Mentor (Department of Women Studies)

"Doubly Disadvantaged?": The Presidential Candidacy of Shirley Chisholm

Andrea Diekman (Department of Women's Studies)

Jocelyn Stitt, Faculty Mentor (Department of Women's Studies)

Relationship Violence: Risk Factors for Adolescents

Antoinette Wall (Department of Women's Studies)

Dr. Barbara Keating, Faculty Mentor (Department of Sociology)

Males and females can be both victims and perpetrators of relationship violence. Research shows that females are usually the victims of relationship violence. Using qualitative content analysis, I examine some of the different risk factors that may lead adolescents to become perpetrators or victims of relationship violence. Some risk factors may include self-esteem, rigid sex-role ideas, parents in violent relationships, and friends who are in violent relationships. These risk factors do not apply to every case of adolescent relationship violence. Relationship violence among adolescents is important to study so we can find out when and why acceptance of relationship violence starts. This then can help us find ways to prevent these patterns from reoccurring later on in life.

The Relationship Between Women of Third World Countries and the Environment, the Overlap of Oppression and the Role Ecofeminism is Playing

Melissa Kjolsing (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

Ecofeminism is a feminist approach to environmental ethics. Ecofeminists see the oppression of women and the domination of nature as related; as a movement, ecofeminist theorists use a framework that confronts issues of gender, race, class, and nature. Researching the relationship between the oppression of women in third world countries and the oppression of nature identified an overlap in problems associated with these two marginalized groups. I reviewed several journals and critical articles that compared this relationship, along with personal reviews of other researchers who had developed opinions based on their own research of this topic. To battle the oppression of one, we must battle the oppression of the other. Thus, eliminating one type of oppression could eliminate both.

Gender, class and globalization: A historical analysis of sweatshops in China and Mexico.

Ann Goldsbury (Department of Women's Studies)

Susan Freeman, Faculty Mentor (Department of Women's Studies)

Since the inception of sweatshops in China and Mexico, workers in these countries have been exploited for foreign labor by several leading companies that are housed in the United States. Documentaries such as *China Blue* and *Maquilapolis [city of factories]* are but a few examples of the efforts that help raise awareness about the issues sweatshop workers face. Through a historical analysis of sweatshops (specifically in China and Mexico) and their growth internationally and by using a feminist intersectional lens that attends to issues of gender, class and globalization, this project acknowledges the efforts to promote equal rights and proper work and living conditions have created significant change in sweatshops. However sweatshops continue to abuse women, men and children in order to turn a huge profit for U.S. companies.

Mixed Messages: The Contradiction of Dove's Real Beauty Campaign Against Their Better-Aging Products

Meagan Steele (Department of Women's Studies)

Susan Freeman, Faculty Mentor (Department of Women's Studies)

There are many contradictory messages presented to women from the media. Jean Kilbourne's popular video on women in media and other websites and organizations, such as Aboutface.com and Girls Inc., have encouraged deeper examination of the representations of women and girls in the media. For this project I conducted a feminist comparative analysis of how Unilever Corporation offers contradictory messages about beauty and aging. Dove's Campaign for Real Beauty promotes the idea that women should accept who they are and reject the idea of the stereotypical "perfect body." But their advertisements for products that emphasize youth and better aging reinforce sexist and ageist messages about women's beauty. I compared Dove's Campaign for Real Beauty to Dove's "better-aging" advertisements and products by examining TV commercials, advertisements in women's magazines and the campaign's website to compare the ideas that are conveyed about gender, aging and beauty. Using this content analysis I hope to effectively shed light on the contradiction of media messages directed towards women in today's society and promote media literacy so that girls and women become more critical consumers of the media and products that are directed towards them.

Online Anti-choice Rhetoric: A New Generation, the Same Old Deception.

Emily Dolentz (Department of Women's Studies)

Jocelyn Stitt, Faculty Mentor (Department of Women's Studies)

The pro-life movement is a powerful political movement. With the popularity of communicating through the internet growing rapidly in the past decade, especially for young people, the movement has become more successful in intervening in the lives of pregnant women and shaping the views of others. For this research I examined the movement to understand its goals and the ways in which it accomplishes them. In particular, I used content analysis to analyze online pro-life websites aimed at pregnant women, I examined the ways language and rhetoric is used to sway women in deciding to continue their pregnancy. It is important for those fighting for women's reproductive rights in the pro-choice movement to understand the efforts of its opposition. It is important for the pro-choice movement to directly respond to the deceptive information coming from the pro-life movement.

The Virginal Archetype: Female Representation in the Slasher Film

Shannon Claybaugh (Department of Women's Studies)

Helen Crump, Faculty Mentor (Department of Women's Studies)

The representation of women in slasher films from the late 1970's and early 1980's is worth exploring due to its depiction of the virginal female archetype and her level of empowerment. Scholars identify the slasher film as a sub-genre of horror that has a serial killer who stalks and kills a community of teenagers. The virginal female archetype they discuss is the last remaining female who ultimately defeats the killer. Scholars argue that in films like *Halloween*, *Friday the 13th*, and the *Texas Chainsaw Massacre*, the remaining female survivor, or the Final Girl, is in fact empowered, and represents certain traditional cultural values of that time. This paper explores the arguments made by feminist film critics regarding the empowerment of women in slasher films. Such scholars discuss these women as the subject of the male gaze, the women as sexual objects to the killer, as well as the empowerment of the Final Girl. The significance of this research will bring light to the representation of women in horror genres. The slasher films from the late 1970's and early 1980's are especially important because of the cultural values they represent, and because they paved the way for images of women in horror film today.

Domestic Violence in Relationships

Amber Hansen (Department of Women Studies)

Jennifer Scheman Snell, Faculty Mentor (Department of Women Studies)

Domestic violence is defined as physical or emotional abuse; behaviors used by one person in a relationship to control the other by using acts of intimidation, threats, sexual assault, stalking, controlling money or bank accounts, and other violent/controlling behaviors. Domestic violence is a social problem that is a result of hierarchal and patriarchal culture. Consequently men who control and dominate almost seem as the 'everyman'. My research examined the dynamics of domestic violence and a woman's lived experiences and narratives. My research will provide a better understanding of why women stay in abusive relationships. This paper will incorporate information from 'Battered Women's' organizations whose main focus is on women's empowerment. The methodology of this research is based on the feminist theories. It provided that women, who were empowered and had resources, were able to leave their abusive relationships. By analyzing my resources on domestic violence, published testimonials of women in abusive relationships, and understanding the Power and Control Wheel, the complexity of why women stay in abusive relationships is revealed.

“Doubly Disadvantaged?”: The Presidential Candidacy of Shirley Chisholm

Andrea Diekmān (Department of Women’s Studies)

Jocelyn Stitt, Faculty Mentor (Department of Women’s Studies)

In order to get their voices heard, groups with different interests and needs, often racially, socially, and economically marginalized groups, must take an active role in developing policies. Political representation is essential in articulating the need for change and then creating that change. However, African American women face a "double disadvantage" in gaining seats as political representatives. Both women and African Americans have different significant problems gaining political office than their male or white, respectively, counterparts do. African American women are especially disadvantaged because of their challenges with the interlocking oppressions of both racism and sexism.

While there are many individual examples of the “double disadvantage” African American women face in American political elections, one specific female candidacy was examined in this study. In 1972, Shirley Chisholm was first black female to run for the Democratic Party nomination for president. She was also the only black and only female candidate competing in the primaries; however both the National Organization for Women (NOW) and the Congressional Black Caucus did not endorse her. Questions sought to be answered in this content analysis research included: Why did NOW and the Congressional Black Caucus both decide not to endorse Chisholm in the 1972 presidential Democratic primary race? How did the chosen language by the media as well as the amount of coverage of Chisholm’s candidacy affect these groups’s choice to not endorse her? A content analysis was conducted to investigate these questions in order to identify areas that change needs to be made in order to increase the number of black women elected to political office.

College of Science, Engineering, and Technology

#1 - Comparing the Potential Cellulosic Ethanol Production of Five Prairie Grasses

Alex Cahlander-Mooers and Janet Wood (Department of Biological Sciences)

Christopher Ruhland, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Large Grant

#2 - Confirmation of the Polyglutamine Protein KIAA1946's Intracellular Localization.

Esther Erosnosele, Megan Fischer (Department of Biological Sciences)

Geoffrey Goellner, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#3 - Intracellular Localization of the Novel Polyglutamine Protein KIAA1946

Daniel L. Haus (Department of Biological Sciences)

Geoffrey Goellner, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#4 - Effect of Normal Polyglutamine Polymorphism on Huntington Disease Protein Function.

Mark Thompson (Department of Biological Sciences)

Geoffrey Goellner, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#5 - Effects of Reduced Aldosterone on Resting Blood Pressure in the Wistar-Kyoto (WKY) Rat

Angela Sanderson (Department of Biological Sciences)

Penny Knoblich, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#6 - Vasculature Regeneration Following Partial Hepatectomy in the Rat

Brittany Frank, Sarah Karalus (Department of Biological Sciences)

Dr. Michael Bentley, Faculty Mentor (Department of Biological Sciences)

*Recipient of Minnesota State University, Mankato Foundation Grant

#7 - Anatomical Characterization of the Rat Peripheral Neurovasculature

Chelsea Vreeman, Stacy Singfiel (Department of Biological Sciences)

Dr. Michael Bentley, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#8 - Determination of the Mechanism Through Which Activated Charcoal Amendment of Soils Impacts Soil Microbial Community Catabolic Activity

Adam Mely (Department of Biological Sciences)

Timothy Secott, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#9 - The Effect of Nutrient Levels on the Allelopathic Ability of Reed Canary Grass (*Phalaris arundinacea*) on Lettuce

Selina Pradhan (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#10 - Comparison Of Distiller's Grain and Corn Gluten Concentrations on the Germination Of Common Weeds: common mallow (*Malva neglecta*), dandelion (*Taraxacum officinale*), and wild garlic (*Allium ursinum*)

Mark Saxhaug (Department of Biological Sciences)

Brandon Bragg (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#11 - Is Chemical Warfare a Mode of Invasion of Reed Canary Grass (*Phalaris arundacea*) in Wetlands?

Jordy Veit (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#12 - Effects of pH on Lead Shot Solubility in Water and Sediment in Upstream and Downstream Locations from a Hunting Preserve in Minnesota

Michael DeMars, Cory Denzer, Roland Pavek, Alison Vikla (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#13 - Comparison of Nutrients, pH and Total Suspended Solids in Snow Melt from North and South Facing Slopes in the San Juan Mountain Range of Colorado

Jake Engelman, Wes Gardner (Department of Environmental Science and Geography) Richard Knowlton (Department of Environmental Science and Geography)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#14 - Determination of the Minimum Concentrations of Ampicillin Needed to Inhibit the Growth of Gram-Negative Bacteria Recovered From Tributaries of the Minnesota River

Elias K. Abdi (Department of Biological Sciences)

Timothy E. Secott, Faculty Mentor (Department of Biological Sciences)

#15 - Determining the Laboratory Conditions Best Suited for Reproduction of *Bithynia Tentaculata*

Marie Balano (Department of Biological Sciences)

Robert Sorensen, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

#16 - *Mycobacterium paratuberculosis* Carbon Catabolism in Nutrient-Rich and Nutrient-Poor Environments

Eric Russell, Amanda Vaske (Department of Biological Sciences)

Timothy E. Secott, Faculty Mentor (Department of Biological Sciences)

*Recipient of Minnesota State University, Mankato Foundation Grant

#17 - The Impacts of Restored Wetlands and Ravines on Water Quality within the Seven Mile Creek Watershed in South Central Minnesota

Caitlin Langer (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

#18 - Identifying Currently Unaddressed Fluoroquinolone Antibiotic Complexes in Ground Water Systems

Indumini A. Weeramantri, Trista Ayers (Department of Chemistry and Geology)

Trent P. Vorlicek, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Minnesota State University, Mankato Foundation Grant

#19 - Stream Profile Analysis of the Le Sueur River Stream Capture Event

Katherine Schroeder (Department of Chemistry and Geology)

Chad Wittkop, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Minnesota State University, Mankato Foundation Grant

#20 - Allele-Specific PCR and SSCP Analysis of ABO Variants

Yohani K G V Gamage (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

#21 - Investigating the Pathogenesis Response of Soybean Varieties with High Quality Indices

Paskal Pandey and Anil Thapa (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

#22 - Effect of Lowered Aldosterone Levels on the Expression of Mineralocorticoid Receptors in Normal and Hypertensive Rat Kidneys

Martina Gray (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Minnesota State University, Mankato Foundation Grant

#23 - The Effect of Reduced Aldosterone Levels on 11 β -HSD Isoform Expression in Normal and Hypertensive Rat Kidney Tissue Using q-PCR

Kristina Dittrich and Linet Nyarobi (Biochemistry, Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

#24 - Identification of a reaction by-product in the synthesis of tetradecyl chloride.

Chad Kratochwill (Department of Chemistry and Geology)

Dr. Brian Groh, Faculty Mentor (Department of Chemistry and Geology)

#25 - Facilitated Attachment of the N-(3-Hydroxypropyl) Urea Unit to a Solid Phase Resin Using 9-Fluorenylmethoxycarbonyl (Fmoc) as a Protecting and Quantifying Group

Souksavanh Phaengkhouane (Department of Chemistry and Geology)

Michael J. Lusch, Faculty Mentor (Department of Chemistry and Geology)

#26 - Quantifying the Immunoreactivity of Polyclonal IGG and IGY

Tizazu Cheritu and Ben Weingartz (Department of Biological Sciences)

Marilyn Hart, Faculty Mentor (Department of Biological Sciences)

#27 - Identifying the Specific DNA Sequence that is the Target for Potential Anti-Cancer Agent "SOS"

Elizabeth M. Gripenrog (Department of Chemistry and Geology)

Danaè Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Minnesota State University, Mankato Foundation Grant

#28 - Investigating the Role that Compounds in Vanilla and Cinnamon Play in Preventing Cancer

Vy T. T.Nguyen (Department of Chemistry and Geology)

Danaè Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

#29 - How Guided Inquiry Classes Affect Students' Learning Chemistry

Brendan P. Roggow (Department of Chemistry and Geology)

Jeffrey Pribyl, Faculty Mentor (Department of Chemistry and Geology)

#30 - Synthesis of a Novel Podophyllotoxin Derivative for Use as an Anti-Cancer Drug

Abigail K. Wagner (Department of Chemistry and Geology)

Danaè Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

#31 - Fluid Movement through the Mesabi Iron Range, Minnesota

Kyle Makovsky (Department of Chemistry and Geology)

Dr. Steven Losh, Faculty Mentor (Department of Chemistry and Geology)

#32 - Evaluation of Pretreatment Methods in the Production of Ethanol from Cattail Leaves

Kristen Krahmer (Department of Chemistry and Geology)

Elijah N. Wreh (Department of Biological Sciences)

James E. Rife, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

#33 - Bach Flower Essence Extraction and Identification of Mimulus Extracts

Zane Hauck (Department of Chemistry and Geology)

Danaè Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

*Recipient of Undergraduate Research Conference Small Grant

#34 - Individual Fly Behavior in *Drosophila* Lines Selected for Extreme Geotaxis Response

Elijah Wreh, Justin Perlich, and Chad Taylor (Department of Biological Sciences)

Daniel P. Toma, Faculty Mentor (Department of Biological Sciences)

*Recipient of Undergraduate Research Conference Small Grant

Comparing the Potential Cellulosic Ethanol Production of Five Prairie Grasses

Alex Cahlander-Mooers and Janet Wood (Department of Biological Sciences)

Dr. Christopher Ruhland, Faculty Mentor (Department of Biological Sciences)

The demand for alternatives to fossil fuels has increased as the need for energy grows with an expanding global population. Increasingly popular substitutes for traditional fossil fuels are biofuels which are economically competitive and environmentally superior. Cellulosic-based ethanol is a biofuel from woody and herbaceous plant residues and crop wastes. This study evaluated the potential production of cellulosic ethanol from grasses in a native prairie, rather than farmland; reducing the fertilizer and pesticide input, lowering runoff, and reducing stress on corn as a fuel source. The study's focus was on the cellulose content of dominant prairie grasses and their population densities to examine which species had the greatest potential for biofuel. The species evaluated were big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), reed canary grass (*Phalaris arundinacea*), switchgrass (*Panicum virgatum*) and Indian grass (*Sorghastrum nutans*). The population densities of each species were measured in a native southwest Minnesotan prairie. Samples of each species were analyzed to find the cellulose content. The density data and cellulose content data were used to calculate the potential amount of ethanol per acre for each species. From these calculations the species with the most potential for biofuel production were determined. Results of this research provided a better understanding of which prairie grass species could provide the greatest output of ethanol per acre and can be the foundation for further research comparing monocultures of the highest yielding species with different combinations of prairie species.

Confirmation of the Polyglutamine Protein KIAA1946's Intracellular Localization.

Esther Erosnosele, Megan Fischer (Department of Biological Sciences)

Geoffrey M. Goellner, Faculty Mentor (Department of Biological Sciences)

There are approximately 20,000 genes within the human genome, and of these genes- over 40% are considered novel (genes of unknown function). As all genes code for proteins involved in important cellular processes, deciphering the normal function of unknown genes is essential to our overall understanding of how cells work, and may allow researchers to better identify gene abnormalities that affect human health. With the use of standard molecular/cell biological techniques (such as restriction digestion and electrophoresis), we have initiated studies to determine the cellular function of one such novel gene product called KIAA1946. As a first step, we have attempted to clone KIAA1946 into a vector containing a "FLAG" epitope- in order to create a FLAG-KIAA1946 fusion protein that we can use to localize our novel gene product in tissue culture cells. Localization in cells provides a good first clue regarding the function of a novel protein- such as KIAA1946. Our cloning strategy was to use restriction enzymes (SalI and BamHI) to cut KIAA1946 out of a pre-existing vector and splice it into the same restriction sites of our FLAG-vector. Once successfully cloned, we will perform immunolocalization experiments to compare FLAG-KIAA1946 location in cells relative to previous data showing GFP-KIAA1946 in cytoplasmic vesicles that are reminiscent of endosomes.

Intracellular Localization of the Novel Polyglutamine Protein KIAA1946

Daniel L. Haus (Department of Biological Sciences)

Geoffrey M. Goellner, Faculty Mentor (Department of Biological Sciences)

Of the more than 20,000 proteins coded for within our human genome, a significant percentage remains completely unstudied. One such uncharacterized gene product is the novel 92kDa protein KIAA1946. While little is known regarding KIAA1946's molecular function in cells, two important features can be inferred from bioinformatic analysis of its protein sequence: (1) it is likely a transmembrane protein, and (2) it contains a polyglutamine (polyQ) region. This last feature is particularly interesting since a number of severe neurodegenerative disorders (Ex. Huntington's Disease) are caused by mutation of the polyQ stretch within their respective gene products. As an initial step in characterizing the cellular function of KIAA1946, our lab has constructed a KIAA1946-GFP fusion protein, and performed fluorescent microscopy localization experiments in tissue culture cells. Consistent with the bioinformatic data, these early experiments showed that KIAA1946 displays a vesicular staining pattern in the cytoplasm of Cos-7 cells- reminiscent of endosomes or lysosomes. In this study, we employ a co-immunofluorescence assay (with known endosomal and lysosomal marker proteins) to definitively determine which vesicular compartment KIAA1946 localizes to. Our preliminary data suggests that KIAA1946 is likely an endosomal-associated protein.

Effect of Normal Polyglutamine Polymorphism on Huntington Disease Protein Function.

Mark Thompson (Department of Biological Sciences)

Geoffrey M. Goellner, Faculty Mentor (Department of Biological Sciences)

Huntington Disease (HD) is a progressive neurodegenerative disorder that causes deterioration of specific brain cells- leading to uncontrolled movement, emotional disturbance, and ultimately death. HD results from a mutation in the DNA encoding the protein huntingtin- a large protein of unknown function ubiquitously expressed throughout all tissues of the human body. Interestingly, huntingtin contains a polyglutamine (polyQ) tract near its NH₂-terminus that is normally polymorphic within the human population (Q₆- Q₃₅), but that increases in size well beyond its normal range to cause disease. It is unclear what consequence normal polyQ polymorphism has on huntingtin function within cells- thus we are deriving a series of HD constructs differing in polyQ tract length (to go along with the huntingtin constructs 23, 45, 55, and 86 glutamines currently in the lab). These new "normal range" constructs will ultimately be used to perform protein localization experiments within tissue culture cells to elucidate how normal polyQ tract length polymorphism affects huntingtin intracellular localization.

Effects of Reduced Aldosterone on Resting Blood Pressure in the Wistar-Kyoto (WKY) Rat

Angela Sanderson (Department of Biological Sciences)

Penny Knoblich, Faculty Mentor (Department of Biological Sciences)

Hypertension, also known as high blood pressure, is a well known cause of cardiovascular disease. One component of blood pressure regulation, the sympathetic nervous system (flight or fight system), raises blood pressure during activity or stress. This is believed to explain the association between the “type A personality” (high strung individuals) and hypertension. The second component, blood volume, is primarily regulated by aldosterone, produced in the outermost layer of the adrenal cortex. Aldosterone increases blood pressure by increasing the sodium and water retained by the kidneys, which increases the blood volume. Regulation of blood pressure is complex, but both sympathetic nervous system effects and blood volume are important components. The goal of this research is to determine what effects reduced aldosterone will have on resting blood pressure and blood pressure during activity of the WKY rat. WKY rats were subjected to an adrenal freezing surgery that reduced aldosterone levels. Sham rats, underwent a sham (control) surgery that involves identical incisions and sutures, but no adrenal freezing. Both the adrenal frozen and sham rats were implanted with a remote monitor which will take blood pressure and activity readings hourly, for 48 consecutive hours per week. The use of this device allows elimination of the stress associated with manually measuring blood pressure, and a more accurate determination of the effect of reduced aldosterone on blood pressure.

Vasculature Regeneration Following Partial Hepatectomy in the Rat

Brittany Frank, Sarah Karalus (Department of Biological Sciences)

Michael Bentley, Faculty Mentor (Department of Biological Sciences)

It is well known that when a portion of liver tissue is removed, the remaining tissue will undergo regeneration. Although much is known about the regeneration process, very little is known about the regrowth of the vasculature in the liver. To further analyze the regrowth of the vasculature, partial hepatectomies were performed on rats. Ten adult rats were used for this study. Five rats were used for sham surgeries and the other five were used for the partial hepatectomy. Two weeks after the surgeries, each rat was reopened and the vasculature of its liver was infused with 0.9% saline and 2.5% glutaraldehyde in 0.10 M phosphate buffer (pH 7.2). The livers were then post-fixed for one hour in 1% osmium tetroxide. The livers were dehydrated in acetone, critical point dried and studied by scanning electron microscopy. Two weeks after the hepatectomy, the remaining tissue of the experimental livers increased in size and had a mass comparable to the control. Vascular regrowth occurred in remaining lobes and not at the site of resection. The results of this study indicate that vascular regrowth is an integral part of liver regeneration and that new scar tissue that formed at the site of resection interfered with the regeneration process.

Anatomical Characterization of the Rat Peripheral Neurovasculature

Chelsea Vreeman, Stacy Singfiel (Department of Biological Sciences)

Michael Bentley, Faculty Mentor (Department of Biological Sciences)

Vascularization is essential in the continued existence and maintenance of the nervous system. Neurons are functional cells of the nervous system; they rely on a constant supply of oxygen and glucose supplied by capillaries. Information regarding the anatomical distribution of capillary beds amongst peripheral nerves is vital in the comprehension of the allocation of nutrients. Studies carried out previously demonstrated that the arterial supply and venous drainage were visible running parallel to the sciatic nerve of the Wistar Kyoto rat. Also, capillary networks were evident in the outer tissue layer with capillary structures extending into the deeper tissue. In continuance with these previous findings, the purpose of this study was to further characterize the morphology of the microvasculature of these peripheral. This was accomplished by observing the anatomical layout of the capillary beds and analyzing their interactions with the tissue of the peripheral nerves. Corrosion casting was used to examine the three-dimensional relationship between capillary beds and the proximal peripheral nerves. PU4ii resin was infused into the descending aorta of anesthetized Wistar Kyoto rats. The plastic was allowed to polymerize and the sciatic nerve was removed. In addition, sciatic nerves without infusion were removed for digestion. The sciatic nerves were placed in 0.25% collagenase and incubated for 1.25 hours at 37°C. After the partial enzymatic digestion, the nerves were fixed in 3% glutaraldehyde and prepared for scanning electron microscopy. The images obtained show the arrangement of the vasculature with the nerve fibers.

Determination of the Mechanism Through Which Activated Charcoal Amendment of Soils Impacts Soil Microbial Community Catabolic Activity

Adam Mely (Department of Biological Sciences)

Timothy Secott, Faculty Mentor (Department of Biological Sciences)

Many invasive species exhibit a trait termed allelopathy, in which those species secrete noxious chemicals (allelochemicals) that inhibit the growth of native plant species. Typically, researchers have amended soils with charcoal as a means to adsorb allelochemicals. However, research in our lab has shown that amendment of soil with charcoal affects microbial communities present in those soils. This study was designed to determine whether the effect of charcoal amendment on soil microbes resulted from a change in the physical porosity of the soil, or the adsorptive capability of charcoal. Sterile soils were amended with activated charcoal or ceramic microspheres, or left unamended, and were passively inoculated with greenhouse microflora for 45 days. Samples were collected at days 15, 30, and 45, and microbial communities present in the soil were tested for carbon source utilization (CLSU) by using BIOLOG plates. CLSU patterns were analyzed using PC-ORD analysis. Analyses of soils collected at later timepoints are pending. Preliminary analysis at day 15 indicated that the microbial communities differed between amended and unamended soils. However, CLSU patterns for glass microsphere- and activated charcoal-amended soils were similar. This indicated that by day 15, the effects of activated charcoal amendment appeared to be due to the physical porosity of the charcoal itself.

The Effect of Nutrient Levels on the Allelopathic Ability of Reed Canary Grass (*Phalaris arundinacea*) on Lettuce

Selina Pradhan (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

Reed Canary Grass (*Phalaris arundinacea*) (RC) is an invasive species in southern Minnesota. Allelopathy occurs when one species of plants is inhibited by another through the release of toxic chemicals called allelochemicals. Methanol extracts of RC grown with another wetland plant reduce the germination of lettuce seeds (Proctor). The objective of this study was to determine if methanol extracts of RC grown alone in different levels of nutrients would also reduce the germination of lettuce seeds. We hypothesized that higher levels of allelochemicals would be found in the roots of RC grown under lower nutrient levels than in the roots grown under higher nutrient levels. RC was germinated in the greenhouse and transplanted to individual containers in October 2008. Twenty containers of RC had 0.15 mg Nitrogen (15%N-5%P-15%K) added weekly and another twenty containers had 0.015 mg of Nitrogen added weekly for 3 months. The plants were harvested and different amounts of the RC roots were extracted with methanol. Each methanol extract was placed in a Petri dish containing a filter paper. The methanol was allowed to completely evaporate. Then 10 lettuce seeds and 10 ml of water were added to each dish. The dishes were incubated at 22-25°C under a 14hours light/10 hours dark cycle. At the end of 7th day the numbers of seeds that did and did not germinated were counted. All treatments were run in triplicate. Controls were also run. I will present the results of these experiments.

Comparison Of Distiller's Grain and Corn Gluten Concentrations on the Germination Of Common Weeds: Common Mallow (*Malva neglecta*), Dandelion (*Taraxacum officinale*), and Wild Garlic (*Allium ursinum*)

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Brandon Bragg (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

Ethanol production from corn produces distiller's grain (DG) as a byproduct. Corn gluten (CG) is a byproduct of the corn wet mill process and has been patented (1991) and marketed as an organic pre-emergent herbicide (Christians, Iowa State University). This project compared the effects of different concentrations of CG and DG on the germination of three common lawn weeds (Flower & Garden Magazine, 1993): Common Mallow (*Malva neglecta*), Dandelion (*Taraxacum officinale*), and Wild Garlic (*Allium ursinum*). All sampling trays were filled with equal masses of potting soil and grown in a greenhouse under controlled temperature and light cycles. Each herbicide was applied to three trays at different concentrations (one, two, or five times the recommended amount). Each tray was separated into three equal sections and a different type of seed planted in each section one week after applying the CG and DG. The controls included three trays that had seeds planted but no CG or DG applied. The hypothesis tested stated that DG is as effective as CG in reducing the germination of these three common lawn weeds. The effectiveness of each herbicide was determined by calculating the percentage of seeds that germinated in a plot and comparing it with other plots.

Is Chemical Warfare a Mode of Invasion of Reed Canary Grass (*Phalaris arundacea*) in Wetlands?

Jordy Veit (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

Reed Canary Grass (*Phalaris arundacea*) (RC) is an invasive species and a major threat to natural wetlands in Minnesota. The purpose of this research was to determine if root extracts of RC reduce the germination of several wetland plants' seeds (Rice Cut Grass, Reed Manna Grass; River Wild Rye). The RC was germinated and grown in individual containers in a mixture of upland soil and sand for 5 months. For 3 months twenty plants were feed once a week with 0.015 mg Nitrogen using a commercial fertilizer containing 15%N-5%P-15%K. Another group of twenty plants were feed once a week with 0.15 mg Nitrogen. The plants were harvested, and biomass was determined. Roots were ground and different amounts of roots were extracted with methanol. Methanol extracts of RC roots grown with other wetland plants has been found to reduce the germination of lettuce seeds. The methanol root extracts were placed into individual Petri dishes lined with filter paper. The methanol was allowed to evaporate. Then seeds (10-20) from each native wetland plant were placed into a Petri dish and 10 ml of water were added. The dishes were incubated at 22-25C under a 14 hour light/10 hour dark cycle. At the end of expected germination period plus 2 days, the numbers of seed that did and did not germinate were recorded. All experiments were done in triplicate and controls were also run. Results from these experiments will be presented.

Effects of pH on Lead Shot Solubility in Water and Sediment in Upstream and Downstream Locations from a Hunting Preserve in Minnesota

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Beth Proctor, Faculty Mentor (Department of Biological Sciences)

The state of Minnesota banned the use of lead shot for migratory bird hunting in 1987 due to its harmful effects on the environment. There are over 53 sporting clay ranges in Minnesota and over 534 in the United States alone. A particular hunting preserve still commonly uses lead shot over and near navigable water sources for clay pigeon shooting and has been in operation since 1975. It is the 30th largest hunting preserve in the U.S. in regards to number of targets thrown and is 1st in the state of Minnesota. Some years they throw as many as 215,000 targets which can result in up to 6.5 tons of lead being released. For this experiment we examined the effects pH had on mobilization of lead from lead shot in water and sediment. Water and sediment samples were collected upstream and downstream from this hunting preserve. We manipulated the soil and water pH levels at 4.5, 6.0, and 8.0. We then placed virgin lead shot in the samples and tested the levels of Pb⁺ in the samples at 2 and 4 week intervals. We will present our results and discuss environmental significance.

Comparison of Nutrients, pH and Total Suspended Solids in Snow Melt from North and South Facing Slopes in the San Juan Mountain Range of Colorado

Jake Engelman, Wes Gardner (Department of Environmental Science and Geography) Richard Knowlton (Department of Environmental Science and Geography)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

Snow melt is a predominant source of water in the mountains of Colorado. Water quality of this snow melt is of ecological significance. Snow cores were collected in the south western corner of Colorado in the San Juan Mountain Range near the town of Silverton on a north-facing slope (elevation 11,200 ft), a south-facing slope twenty miles outside of town (elevation 11,200 ft) and in the town (elevation 9,318 ft). The snow cores (approximately 1 meter in length) were divided into 5 cm sections and placed into plastic Ziploc bags. The snow was melted and the water analyzed for pH, nutrients (ortho and total phosphorus; and nitrate-nitrite nitrogen) and total suspended solids. Due to the direction and deposition of wind carried and blown dust, we hypothesized that the snow from the south-facing slope had the higher levels of nutrients and solids. We will present our data and discuss their environmental implications.

Determination of the Minimum Concentrations of Ampicillin Needed to Inhibit the Growth of Gram-Negative Bacteria Recovered From Tributaries of the Minnesota River

Elias K. Abdi (Department of Biological Sciences)

Timothy E. Secott, Faculty Mentor (Department of Biological Sciences)

There is a growing concern about antibiotics leaching from septic systems or from livestock operations into water systems, as this may contribute to the development of antimicrobial resistance in pathogenic organisms. Previous work has shown that organisms resistant to tetracycline and ampicillin are present in water from tributaries of the MN River. However, these results were performed using disk diffusion testing, which allows only qualitative assessment of susceptibility or resistance to antibiotics. The purpose of this study was to use minimum inhibitory concentration (MIC) testing to provide quantitative reevaluation of previous work, with an interest in detecting emerging trends in microbial resistance to ampicillin. We have demonstrated that our technique provides accurate reproducible results with *Escherichia coli* ATCC 25922, a quality control strain. MIC testing will be conducted on gram-negative organisms previously tested by disk diffusion. A comparison of these results will be presented, along with emerging general trends in ampicillin resistance.

Determining the Laboratory Conditions Best Suited for Reproduction of *Bithynia Tentaculata*

Marie Balano (Department of Biological Sciences)

Robert Sorensen , Faculty Mentor (Department of Biological Sciences)

Bithynia tentaculata is an exotic, aquatic gastropod that is related to the bird mortality on the Upper Mississippi River. This snail is known to serve as both a first- and second-intermediate host of the parasitic trematodes, *Cyathocotyle bushiensis* and *Sphaeridiotrema globulus*. Since the snails play a role in the transmission on the trematodes it is important to understand the life-history of these snails and consider how the life history of these snails could impact their interactions with these parasites. Few studies have looked at the relationship between environmental conditions and the snails' life-history characteristics. The goal of this project is to determine how temperature, nutrient availability and substrate conditions affect snail growth, survival and reproduction. Tank temperature was held relatively constant at 20°-22°C. Algae was added at the beginning of the experiment as a form of nutrient. Nutrafin Tropical Fish Flakes were also added to each tank weekly. The experiment has been ongoing for 3.5 months. The data that is being collected is snail mortality, reproduction (number of egg sacks observed), and growth (number of new baby snails). We have found that the treatment, which contained rocks from the snails' original location, was unsuccessful. In this treatment all the snails died from an apparent infestation of zebra mussel larva. Results also showed that 98% of the initial snails still remain alive and are reproducing. Egg sacks have appeared in 50% of the replicates for each of the treatments, including the discontinued rock treatment.

***Mycobacterium paratuberculosis* Carbon Catabolism in Nutrient-Rich and Nutrient-Poor Environments**

Eric Russell, Amanda Vaske (Department of Biological Sciences)

Timothy E. Secott, Faculty Mentor (Department of Biological Sciences)

Mycobacterium paratuberculosis (Mpt) is an acid-fast bacillus that causes Johne's disease, a chronic enteritis of cattle. This disease is a significant cause of economic loss for the dairy industry. Normally, Mpt is transmitted from mother to calf, but it has been shown that it can survive outside the host. How the organism is able to survive outside the host is unclear. The purpose of this study was to investigate changes in the physiology of Mpt, as indicated by changes in its catabolic activity, that could enable the organism to survive in the environment. PAMSUM-8 and PAMSUM-9 strains of Mpt were grown in rich medium (Middlebrook 7H9) to represent nutrient conditions in the host, and minimal medium (Sauton's broth) to represent nutrient outside the host. Strains grown separately in each medium were used to inoculate BIOLOG microplates to identify carbon sources used by Mpt. Both strains utilized dextrin, regardless of original growth medium. Overall, Mpt grown in Sauton's broth used fewer carbon sources. However, Mpt grown in this medium utilized four carbon sources (succinic acid, formic acid, gentiobiose, and D-glucuronic acid) that were not catabolized by Mpt grown in rich medium. In addition, the catabolic potential in both media varied between the strains studied. Future experiments will explore the potential role of each of the four unique substrates utilized by Mpt grown in minimal medium.

The Impacts of Restored Wetlands and Ravines on Water Quality within the Seven Mile Creek Watershed in South Central Minnesota

Caitlin Langer (Department of Biological Sciences)

Beth Proctor, Faculty Mentor (Department of Biological Sciences)

Seven Mile Creek has a 23,551-acre watershed located in the Middle Minnesota River Basin in South Central Minnesota. Cultivated land covers 86% of the watershed. Historic maps and surveys indicate that 50% of Seven Mile Creek watershed was formerly covered in wetlands. Eighty-eight percent of those wetlands have been converted to cropland. In addition, miles of public and private drainage ditches, which feed into Seven Mile Creek, have been installed. Wetlands, once previously abundant in this area, provide natural filters, often releasing water of much higher quality than that which flowed into them. This study set out to test the water quality upstream and downstream from a restored wetland in the watershed, as well as at the top and bottom of the Seven Mile Creek ravine. The water quality parameters monitored were nitrates-nitrites, total phosphorus, ortho phosphorus, total suspended solids, total suspended volatile solids, temperature, and conductivity. Water samples were taken during pre- and early-spring snowmelt, as well as during any storm events. The goal of the research was to quantify the changes in water quality caused by restored wetland and ravine in order to provide recommendations as to whether widespread wetland restoration would be advisable in the watershed, and/or if other management techniques should be considered.

Identifying Currently Unaddressed Fluoroquinolone Antibiotic Complexes in Ground Water Systems

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Trent P. Vorlicek, Faculty Mentor (Department of Chemistry and Geology)

Fluoroquinolones, a class of powerful antibiotics, enter the environment via waste water effluent and soil applications of human sludge, or agricultural manure. The persistence of fluoroquinolones may pose a threat to aquatic organisms and promote bacterial resistance. Such negative impacts of fluoroquinolone contamination on the environment as well as public health demand that these bioactive components' environmental fate and transport pathways be clearly defined. According to pharmaceutical literature, metal-fluoroquinolone complexes are likely stable within soils and waste waters. Furthermore, metal-fluoroquinolone complexes often have increased antimicrobial activity relative to the fluoroquinolones alone. However, minimal research has been conducted regarding the role metal-fluoroquinolone complexes may play in environmental systems. Results of previous research done in our laboratory showed that cadmium (Cd; a heavy metal found in animal wastes), Ciprofloxacin (a common veterinary fluoroquinolone antibiotic) and P-nitrophenol (PNP; an herbicidal degradation product) readily combine to form a ternary complex. Current work extends to other transition metals (Fe, Cu, Zn) and various chlorinated nitrophenols, which stem from degradation of herbicides that are often chlorinated. Results point to the likely formation of both soluble and insoluble ternary complexes. Iron, the most prevalent transition metal in natural waters, appears to form the sole soluble ternary complex. Experiments involving the chlorinated nitrophenols are ongoing. Since the base forms of the nitrophenols appear to be required for complex formation, the lower pka values of chlorinated versus nonchlorinated nitrophenols ought to ensure the reactivity of these pesticide degradation products over the range of natural water pH.

Stream Profile Analysis of the Le Sueur River Stream Capture Event

Katherine Schroeder (Department of Chemistry and Geology)

Dr. Chad Wittkop, Faculty Mentor (Department of Chemistry and Geology)

The Le Sueur River—a major tributary of the Blue Earth River, which leads to the Minnesota River—is a principle source of sediment to Lake Pepin, which is filling in at an increasing rate. The Le Sueur River is unusual because it shows clear evidence of a recent stream capture event, which diverted the mouth of the river from downtown Mankato (along Stoltzman Road) to the Blue Earth River. With the use of Geographic Information Systems (GIS), I determined longitudinal profiles of the Le Sueur River and the Blue Earth River. The longitudinal profile shows the change in elevation of the riverbed over distance from the mouth. With these profiles, I identified the location of knickzones, which are sections of the profile with steeper slope that produce high amounts of erosion. I also used GIS to locate terraces, which mark where the river existed before it started cutting a new channel. I have obtained samples of material within the abandoned channel for absolute age dating using optically stimulated luminescence, which determines the time of last exposure of quartz to sunlight. By comparing the position of the Le Sueur River knickzone with the Blue Earth River knickzone, I determined the relative significance of the stream capture event in the evolution of the stream profile. Absolute age dating was used to quantify the results of the GIS analysis and determine the relationship between the stream capture event and the excess sediment load generated by the Le Sueur River.

Allele-Specific PCR and SSCP Analysis of ABO Variants

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Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

The ABO blood group system is the most important blood group system for various clinical applications. Some genetic variants of the four basic blood groups A, B, AB and typing that have been problematic in some cases of transfusion medicine. These variants were usually different by only one nucleotide and are called Single Nucleotide Polymorphisms (SNPs). The purpose of this study was to develop a quick and simple methodology called Allele Specific Polymerase Chain Reaction- Single Strand Conformation Polymorphism (ASPCR- SSCP) to discover novel variants of ABO alleles and especially new O variant alleles. This PCR-SSCP method amplified and separated DNA molecules based on subtle differences in single stranded DNA sequences and resulted in different banding patterns on a 15% gel following denaturation to single stranded forms. The ability to use allele specific amplification prior to SSCP analysis simplified patterns for heterozygotes. For this study DNA was isolated from blood samples using a column capture kit. Two new sets of primers were designed for both region 1 (exon 6) and region 3 (nucleotides 628-940 of exon 7) of the ABO gene. DNAs were amplified by PCR technique and then analyzed on a 15% polyacrylamide gel following formamide denaturation. The variant represented by new banding pattern was further identified using a Li-Cor DNA sequencer. This study showed that the PCR-SSCP method is an efficient and cost effective way for ABO genotyping to be used in applied research.

Investigating the Pathogenesis Response of Soybean Varieties with High Quality Indices

Paskal Pandey and Anil Thapa (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

Plants have the ability to defend themselves against pathogens by activating the expression of pathogenesis related (PR) proteins. Very little is known about the induction of these proteins and how breeding for protein quality affects the expression of these PR genes. These proteins include several protein classes; the first two classes include a PR-1a protein and a beta -1,3- endoglucanase enzyme. The objective of this research project was to investigate whether these PR proteins were induced by mechanical wounding, and whether this induction of mRNA expression was similar in two soybean varieties that differed in their protein quality. Soybeans were germinated and cotyledon leaves were mechanically wounded. Tissues were harvested at varying times following wounding and the RNAs were extracted using a Qiagen RNeasy Kit. After quantitation, the soybean RNAs were used to synthesize complementary deoxyribonucleic acid (cDNA) using a reverse transcription kit. Primers were designed and the cDNAs formed were simultaneously amplified and quantified using the real time polymerase chain reaction method and SYBR Green dye (qPCR). The method was first optimized to allow for quantitation of both PR mRNAs and the housekeeping mRNA, beta actin. Then, it was used to measure differences in the PR mRNAs in the control and wounded tissues of two different soybean varieties.

Effect of Lowered Aldosterone Levels on the Expression of Mineralocorticoid Receptors in Normal and Hypertensive Rat Kidneys

Martina Gray (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

Hypertension is a major health concern among adults worldwide that can lead to cardiac morbidity or death. One cause of hypertension stems from the relationship between the binding of aldosterone and active glucocorticoids to the mineralocorticoid receptor (MR). Aldosterone or active glucocorticoid hormones bind to the MR; this event signals the synthesis of proteins that cause hypertension. Previous results have shown that cryodestruction of the adrenal gland outer layer reduced the levels of aldosterone, but did not always lower blood pressure in the mothers or progeny. These data could have resulted from a compensating increase in the binding by active glucocorticoids or from an increase in the expression of MR. In order to test the latter hypothesis, the levels of the MR were measured in control rat kidney tissues and treated rat kidney tissues. RNA was isolated and quantified from the kidney tissue and then reverse transcribed. Primers and labeled probes were designed for an exon junction region in the MR cDNA and for an exon junction region in a housekeeping cDNA. A real time polymerase chain reaction method was optimized to measure the levels of mineralocorticoid RNA. Then this method was applied to assess differences between the cryo-treated tissues and between normal and hypertensive rat kidney tissues.

The Effect of Reduced Aldosterone Levels on 11 β -HSD Isoform Expression in Normal and Hypertensive Rat Kidney Tissue Using q-PCR

Kristina Dittrich and Linet Nyarobi (Department of Chemistry and Geology)

Theresa Salerno, Faculty Mentor (Department of Chemistry and Geology)

11 β -Hydroxysteroid Dehydrogenase (11 β -HSD) exists in two isoforms, 11 β -HSD1 and 11 β -HSD2. These two enzymes regulate levels of glucocorticoids ; 11 β -HSD1 converts inactive cortisone to active cortisol, while 11 β -HSD2 catalyzes the opposite reaction. Since cortisol and aldosterone both bind to the mineralocorticoid receptor (MR), increases in cortisol can result in hypertension. The goals of this experiment were to measure the effect of decreased aldosterone levels on the levels of the 11 β -HSD isoenzymes. Specifically, we assessed whether there is compensation by the 11 β -HSD isoenzymes to account for the observations that blood pressures were not lowered by the decreased aldosterone levels. The specific question addressed was whether there was an upregulation or downregulation of messenger RNA expressions for either isoenzyme and whether the subsequent effect on cortisol levels resulted in hypertension. Our research focused on the experimental design and the development of methodology; design of primers and probes, RNA isolation and quantification, reverse transcription of RNA to cDNA, and real-time polymerase chain reaction (qPCR). Kidney tissues were obtained and RNAs were successfully extracted from normotensive control Wistar-Kyoto (WKY) rats and spontaneously hypertensive rats (SHR), which underwent surgical destruction of the adrenal glands or a sham surgery. A real time PCR method was optimized and then used to compare mRNA levels of the two isoenzymes relative to mRNA levels of a housekeeping gene.

Identification of a Reaction By-Product in the Synthesis of Tetradecylchloride.

Chad Kratochwill (Department of Chemistry & Geology)

Dr. Brian Groh, Faculty Mentor (Department of Chemistry & Geology)

In the synthesis of tetradecyl chloride from tetradecyl alcohol and phosphorus pentachloride, an undesired white precipitate was observed to form with the product. After purification of the product and isolation of the by-product these materials we characterized by infrared and NMR spectroscopy. ^1H and ^{31}P NMR as well as ^{31}P decoupled proton spectra were obtained. These data proved that some protons were spin-coupled to a phosphorus nucleus in the by-product sample. From these data we were able to deduce that the by-product is possibly an amphipathic salt containing phosphorus and a tetradecyl alkyl group. The by-product structure and supporting spectral data will be presented.

Facilitated Attachment of the N-(3-Hydroxypropyl) Urea Unit to a Solid Phase Resin Using 9-Fluorenylmethoxycarbonyl (FMOC) as a Protecting and Quantifying Group

Souksavanh Phaengkhouane (Department of Chemistry and Geology)

Michael J. Lusch, Faculty Mentor (Department of Chemistry and Geology)

In the search for new drug compounds, the current focus has been shifted to a class of compounds called peptidomimetics, which contain urea as possible drug candidates. Peptidomimetics are compounds that mimic the biological activity of peptides but possess superior pharmacokinetic properties such as absorption, metabolic stability and a lower toxicity. Previous studies involving the synthesis of urea compounds have been done using solid phase synthesis and the toxic compound phosgene or one of its derivatives. Using a method similar to those used by Kearney, et al., the goal of my research is to see if I can synthesize 9-fluorenylmethoxycarbonyl isocyanate by the reaction of commercially available 9-fluorenylmethyl chloroformate with potassium cyanate. By using potassium cyanate instead of phosgene, the experiment becomes safer and reduces the number of steps needed to produce the isocyanate intermediate. Reaction of the FMOC isocyanate with an O-protected 3-hydroxypropyl amine and removal of the O protecting group would then give an FMOC-protected N-(3-hydroxypropyl)urea which could be attached to a solid phase resin through its hydroxyl functional group. Removal of the FMOC group under standard conditions would then release the free resin-bound propylurea and would also allow the measurement of the amount of urea attached to the resin. Results from the research could lead to the creation of a library of compounds containing urea for further studies in the areas of chemical genetics and combinatorial chemistry. Future studies involving the collection of urea compounds could yield biologically active properties and new possible drug candidates.

Quantifying the Immunoreactivity of Polyclonal IGG and IGY

Tizazu Cheritu and Ben Weingartz (Department of Biological Sciences)

Marilyn Hart, Faculty Mentor (Department of Biological Sciences)

Actin, a filament found in the cytoplasm found in all eukaryotic cells, contributes to cell shape, cell mobility, and to the organization of certain tissues such as striated muscle. Actin is regulated by a variety of proteins, including actin capping protein (CP). CP is composed of two subunits, an alpha (α) and a beta (β) subunit. One goal of Dr. Hart's laboratory is to determine if the alpha subunits have similar or distinct functions in cells and tissues. As a first step towards accomplishing this goal, we will determine the location of the alpha subunits in cells/tissues using antibodies specific for each alpha isoform. The goal of our research was to characterize recently generated chicken and rabbit anti- α 1 and α 2 IgG and IgY antibodies, quantifying their immunoreactivity. Murine hearts were removed, flash frozen, and the tissue solubilized. The proteins were separated by Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE) and transferred to Nitrocellulose (NC) for subsequent Western Blot analysis. The immobilized proteins were allowed to react with dilutions of the antibodies and visualized with a secondary antibody labeled with alkaline phosphatase. The reactive titers of both the rabbit anti- α 1 IgG and the chicken anti α 2 IgG and IgY antibodies were determined, providing an initial characterization of the newly generated antibodies and suggesting an approximate working dilution for subsequent studies.

Identifying the Specific DNA Sequence that is the Target for Potential Anti-Cancer Agent "SOS"

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Danaè Quirk Dorr, Faculty Mentor (Department of Chemistry and Geology)

Cancer cells are harmful to organisms due to their lack of termination programming. Non-cancerous cells are programmed to terminate after a certain number of replications. Therefore, a possible solution to overcoming the effects of cancerous cells may be to reprogram their DNA to act similar to the termination programming in non-cancerous cells. There has already been some recent research done on agent NSC 652287 (SOS), a compound that has properties that would enable it to achieve this reprogramming in cancer cells. Prior research has shown that SOS does bind to DNA, specifically 2'-deoxyguanosine. The purpose of this project is to determine the specific DNA sequence for which SOS has specificity for. By determining the sequence specificity that SOS has for DNA, pharmaceutical companies will have the additional information they need to prepare more effective anti-cancer drugs. To achieve this goal, several DNA oligonucleotides with defined sequences were treated with SOS. These short segments of DNA then underwent hydrolysis. This broke apart the DNA into its components. However, the location where the SOS bound to the DNA remained intact so that the sequence that it was specific for could be identified. A HPLC was used to separate the components of the mixture. The data collected from the HPLC has been analyzed to locate the sequences of DNA that the SOS agent reacts with. The results from this project identified the sequence specificity that SOS has for DNA, and how SOS affects these sequences.

Investigating the Role that Compounds in Vanilla and Cinnamon Play in Preventing Cancer

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Vanillin (VAN) and Cinnamaldehyde (CIN) are food flavoring compounds. They are the main flavoring components found in vanilla and cinnamon, respectively. It has been reported that these compounds demonstrate antimutagenic properties against *E. coli* strains. In addition, it was also reported that in *Salmonella* TA 104, VAN and CIN reduced mutation at the guanine-cytosine but not adenine-thymidine sites. Recently, it was reported that both VAN and CIN were antimutagenic in human colon cancer cell line HCT116. The mechanism for the antimutagenic effects of VAN and CIN remain unclear. To elucidate a better understanding of the antimutagenic mechanisms of these interesting compounds, this project focused on characterizing the products of reactions that occur when DNA, 2'-deoxyguanosine, and guanosine are treated with VAN and CIN. The products were analyzed by High Pressure Liquid Chromatography.

How Guided Inquiry Classes Affect Students' Learning Chemistry

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Studies show that students learn concepts better when engaged actively using critical thinking rather than passively listening to lectures. When students are able to interact with other students to discuss and question topics along with constant feedback from the instructor, increased academic success is shown. This is especially true in chemistry classes dealing with complex ideas with which some learners have trouble. This study was designed to determine if a Guided Inquiry class can be used to show correlations with academic success and knowledge retention over the course of a semester. Two sections of two different introductory chemistry courses were used. One section of each course was taught by lecturing. The other section of each course was taught using the Guided Inquiry approach. In the Guided Inquiry sections, students worked in groups of up to four during each class period using materials provided by the instructor. Working as a group creates "group accountability" which helps less motivated students to accomplish more while not hindering the top students. This work demonstrates that the Guided Inquiry method of instruction increased students' retention of chemistry concepts.

Synthesis of a Novel Podophyllotoxin Derivative for Use as an Anti-Cancer Drug

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Podophyllotoxin and its derivatives are well-studied and widely used in a broad range of therapeutic applications, most notably as anti-cancer drugs. It has been previously shown that derivatives of podophyllotoxin are often more potent and have mechanisms of action against cancer cells that differ from the parent compound. In order to potentially maximize the potency of a podophyllotoxin derivative, an additional compound with known anti-cancer properties was chosen to be added to the podophyllotoxin structure. Starting with 2,3-dimethoxybenzaldehyde, a multi-step total synthesis was conducted to yield a podophyllotoxin-like molecule. Intermediate structures were purified by flash chromatography and characterized by Nuclear Magnetic Resonance Spectroscopy (NMR).

Fluid Movement through the Mesabi Iron Range, Minnesota

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The Mesabi Iron Range in northern Minnesota has been an important contributor of iron necessary for products that we use every day. The iron-rich sedimentary rocks were initially deposited in a shallow sea about 1.8 billion years ago. Later, fluids flowed through the rocks dissolving everything but the iron oxides and concentrating them into high-grade ore. I have been studying the source of these fluids as well as their chemical effect on the rocks.

Microscope examination of the iron ores revealed that the early-formed iron-rich mineral greenalite was replaced by other iron-rich minerals, minnesotaite and stilpnomelane. The source of fluids has been studied by analysis of fluid inclusions, which can give both the temperature and the salinity of fluids that are trapped in minerals. Fluids that ascended through the rocks would be expected to have a relatively high temperature and salinity, whereas meteoric fluids that descended from the surface would be expected to have much lower temperatures and salinity. One sample from a fault associated with high-grade iron ore in the Thunderbird mine near Eveleth showed high homogenization temperatures values (mean 125°C) and a high weight % NaCl equivalent (mean 3.98 weight %), suggesting the fluids associated with high-grade ore ascended from depth. Cathodoluminescence of quartz in veins and in the iron formation shows growth banding, produced by pulses of fluid moving through the rock and precipitating minerals episodically. All of the observations are consistent with fluids ascending through the iron formation, interacting with the rocks as they flowed.

Evaluation of Pretreatment Methods in the Production of Ethanol from Cattail Leaves

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Previous research in this lab indicated that cattails are a potential source of biomass for the production of cellulosic ethanol since their carbohydrate composition is comparable to that of other plants being considered for biofuel production. To further test the feasibility of using cattails for biofuel production, we tested various pretreatment methods on dried cattail leaves. Before polysaccharides in plants can be enzymatically hydrolyzed to fermentable sugars, the plant material must be pretreated to render the polysaccharides accessible to the enzymes. The purpose of this project has been to compare the efficiency of three pretreatment methods in preparing cattail biomass for ethanol production. In this project dried, powdered cattail leaves were pretreated either by autoclaving them with 2% sulfuric acid or 0.04 M acetate buffer at pH 4.8 for one hour or by incubating them overnight at 40 C° in 72% aqueous ammonia. In each case, the remaining solid was recovered, washed and dried. Samples of the dried, pretreated solid were treated with cellulase and β -glucosidase for times varying up to 24 hours. To compare the efficiency of these pretreatment methods, glucose liberated in these samples was measured by a glucose oxidase assay and high performance liquid chromatography. Glucose recovered in the original pretreatment liquid was also assayed.

Bach Flower Essence Extraction and Identification of Mimulus Extracts

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Danaè Quirk Dorr Faculty Mentor, (Department of Chemistry and Geology)

In the 1920's, Dr. Edward Bach discovered a connection between our emotions and health. He noted that negative emotions have a negative effect on our ability to heal and prevent disease. Bach flower essences were originally designed with humans in mind to help them cope with high levels of stress, anxiety, or lack of self-confidence. The purpose was to determine what is present in mimulus flower extract. This may provide direction in determining how it works. Mimulus flower extract is a remedy given to people who are generally nervous, shy, and timid, and prefer to stay away from social gatherings. The molecule responsible for this effect could be a flavonoid, which may also be responsible for the coloration of the flower.

Flavonoids are secondary metabolites that are also known to have anti-cancer properties. Currently, there has been no scientific research showing that Bach essences have any biological effects, but there is ongoing research into different flavonoids and their potential cancer fighting effects. Mimulus has been characterized by analyzing the compounds in the essence using high performance liquid chromatography (HPLC).

Individual Fly Behavior in *Drosophila* Lines Selected for Extreme Geotaxis Response

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How do parts contribute to the whole of the organism? And is the whole greater than its parts? Fifty years ago, Dr. Jerry Hirsch began a series of now famous experiments to ask these types of questions regarding behavior. How do certain parts – the genes - contribute to complex behavior in animals? By breeding populations of flies walking up (away from gravity: negative geotaxis) and those that walked down (toward gravity: positive geotaxis) in a t-choice maze, he established *Hi* and *Lo* behavioral lines of flies, respectively. Using these, he was the first to scientifically prove a genetic basis for behavior. Hirsch's flies were tested as *populations*, never as individuals. Therefore, we are studying *individual* flies, as opposed to groups, to ask 1) how does *individual* behavior of the selected populations differ from un-selected flies, 2) how did *individual* decision making change due to selection, and 3) does *individual* behavior differ from its group? By studying flies based on a binary-choice paradigm, results showed long-term selection produced significant changes in the behavioral response of individual flies. Female flies of the *Hi* line were very predictable, while the neutral flies were totally random; there is no such thing as a truly neutral fly. All males have moderate predictability - selection appears to have principally acted through males. In addition, search behavior through the maze has been changed and it appears that the *Lo* line individuals differ significantly from their population in behavior. Other possible differences are presently being examined as well.



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Lesbian Oppression and Love - Historically and Globally

Erin Meyer (Department of Women's Studies)

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Over the last 50 years the heavily debated topic of gay rights has had some major changes. Studies have been done on whether or not being part of the LGBT community is morally right, biologically determined, or socially constructed. History shows that same-sex relationships have not only impacted citizens of the United States, but also many other countries as well. Lesbianism is a prominent issue within gay rights. It is important to understand the histories of these countries regarding human rights. Lesbian lifestyles and female same-sex relationships can be traced back as far as the history of gay males. They have been prominent figures/aspects of numerous cultures and communities. However, lesbians worldwide are experiencing oppression different from what gay males face. Through content analysis of written global documents this research demonstrated that the United States, as well as global communities had exploited lesbians for decades. By challenging what has become an almost global normative, I argue lesbian oppression, that a more accepting and acknowledging society could end discrimination that is clearly based on gender and sexuality.

Needs Assessment of an ICF/MR Facility in Rural Minnesota

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A rural county Department of Human Service agency did a needs assessment on an Intermediate Care Facility for the Mentally Retarded (ICF/MR) in rural Minnesota. The ICF/MR facility director requested a needs assessment to determine the need for the ICF/MR, due to the facility's difficulty in filling an open bed. The assessment was needed in order to find the needs of the consumers at the facility as well as the families and guardians. The high needs of the consumers suggest that the closure of the facility would be difficult on the individuals. Meetings were held with guardians of the consumers who live at the ICF/MR to gather qualitative data on the needs of the individuals, guardians and family members. Findings indicated that the current ICF/MR facility is needed to meet the high needs of the individuals, as well as the wants of the family members and guardians. Results were consistent in pointing out that a closure would be difficult for many involved and that there is need for ICF/MR facility in the rural area.