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St. Cloud State University

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# Annual St. Cloud State University Student Research Colloquium 2006

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# Acknowledgements

Planning Committee members for the Annual St. Cloud State University Student Research Colloquium 2006 include:

- Leslie Valdes, Department of Psychology
- Jennifer Grasswick, College of Science and Engineering
- Jodi Kuznia, Office of Sponsored Programs
- Linda Donnay, Office of Sponsored Programs
- Balsy Kasi, Department of Environmental and Technological Studies
- Scott Miller, Department of Music
- Lisa Splittgerber, Department of Foreign Languages and Literature
- Richard Rothaus, Office of Sponsored Programs
- Dale Williams, College of Science and Engineering

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- Staff of Center for Information Services
- General Maintenance Workers for the Atwood Memorial Center
- Session Moderators
- Registration Table Volunteers
- Best Poster Judging Team
- Chemistry Students (moving of poster boards for poster sessions)
- Psychology Students (registration table)

## **Sponsoring Organizations**

The annual St. Cloud State University Student Research Colloquium is sponsored by the following organizations:

- Office of Academic Affairs
- Office of Sponsored Programs
- College of Science and Engineering
- College of Fine Arts and Humanities

## **Donors**

The 2006 Student Research Colloquium has been made possible through generous financial contributions. A special thank you to the following for their financial support:

- Student Government
- Phi Kappa Phi (Honor Society)
- Husky Bookstore
- Bernick's Pepsi

If you wish to support the Student Research Colloquium, donations may be submitted to the Student Research Colloquium account (#R281030) at the St. Cloud State University Foundation, Alumni and Foundation Center, 720 Fourth Avenue South, St. Cloud, MN 56301-4498.

# Project Sponsors

Thank you to the following Project Sponsors who provided guidance to students as they prepared their research projects for presentation at the Annual St. Cloud State University Student Research Colloquium 2006:

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- Covey, Steve
- Miller, Kenneth

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- Lenz, Brenda
- Schorn-Rhoda, Mary Ann

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- Lidberg, Russell

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- Onyiah, Leonard
- Robinson, David
- Singh, Sarjinder

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- Lo, Ming

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- Baker, Randal
- Blinnikov, Mikhail
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- Wall, David

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- Frank, Stephen
- Greaves, Ed
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- Robert, Marshall

**General Dynamics**

- Wilson, Mark

**Old Dominion University****Biological Sciences**

- Ashford, Julian

**Stony Brook University****Marine Sciences Research Center**

- Colle, Brian

# Program Highlights

## Registration

All student presenters and Project Sponsors are asked to register for the Colloquium. A registration table is located outside of the Ballroom on the 2<sup>nd</sup> floor of Atwood Memorial Center (AMC). Anyone who would like a copy of the Colloquium Proceedings or Colloquium Short Program should go to the registration table.

## Morning Presentations (Sessions: A to G)

The Colloquium opens with a poster session of 47 projects representing all disciplines in the AMC Ballroom from 9 to 10:50 a.m. In addition to the posters, there will be six concurrent paper sessions from 9 to 10:50 a.m. Session topics include science and engineering, behavioral studies and linguistics. Session C will be given in Spanish in the South Glacier room of AMC.

## Morning Presentations (Sessions: H to M)

There will be six concurrent sessions from 11 to 12:30 p.m. Topics include biochemistry, literature, women's studies, anthropology, economics and geography.

## Invited Alumnus Address (12:30 to 1:30 p.m.)

The speaker for the Keynote Address is **Troy Rogers**. Rogers is currently a Ph.D. candidate at the University of Virginia, pursuing a degree in Composition and Computing Technologies at the Virginia Center for Computer Music. Roger's Keynote Address, ***Not either/or but both/and: compositional and performative gestures in the spaces between complementary domains*** will include discussion and demonstration of his work on *PercusBot Study No. 1* (music for his computer-controlled robotic percussion ensemble), *EyeMusic v1.0* (a work in which the performance is controlled in real-time by eye movements), and other compositions. Also on tap will be musings on the complementarity of domains such as analog/digital, physical/virtual, human/machine, art/science, noise/pattern, and sound/silence. His presentation will be in the AMC Little Theatre from 12:30 to 1:30 p.m. with a reception to follow in the AMC Theatre Lounge.

## Afternoon Presentations (Sessions: O to S)

There will be four concurrent sessions from 2 to 3:30 p.m. The SCSU Survey will be presenting their results from the Fall 2005 Statewide Survey in the AMC Mississippi room. In addition, there will be paper sessions on biological studies, geography, and science and engineering.

## Afternoon Poster Presentations (Session T)

There will be 48 poster presentations representing all disciplines from 3 to 4:30 p.m. in the AMC Ballroom.

## Evening Presentations (Sessions: U to W)

There will be three concurrent sessions from 5:00 to 6:20 p.m. There will be a session devoted to teaching English as a second language in the North Glacier room. Other session topics include economics and science and engineering.

## Reception and Student Awards Ceremony (Session: X)

Starting at 6:45 p.m. in AMC Cascade room, there will be a reception for all attendees of the Colloquium. At 7:15 p.m., the recipients of the 2006 Best Poster Awards and the College of Science and Engineering Denise M. McGuire Student Research Awards will be announced. Recipients of Student Research Funds will also be recognized. New this year, students who attend sessions throughout the day and get their passport stamped will be entered into a drawing to win \$400 in prizes!

# Schedule of Events

Event	Time	Room in AMC
<b>Morning Presentations (Sessions A-G)</b>		
Registration for Presenters and Project Sponsors	8:00 - 8:45	2nd Floor
Session A: All Disciplines (Poster Session)	9:00 - 10:50	Ballroom
Session B: Science and Engineering	9:00 - 10:50	North Glacier
Session C: Spanish (Presentations will be in Spanish)	9:00 - 10:20	South Glacier
Session D: Transportation	9:00 - 10:20	Granite
Session E: Behavioral Studies	9:00 - 10:10	North Voyageurs
Session F: Linguistics and Humanities	9:00 - 10:40	South Voyageurs
Session G: Natural Sciences	9:00 - 10:50	Oak
<b>Morning Presentations (Sessions H-M)</b>		
Registration for Presenters and Project Sponsors	10:00 - 10:45	2nd Floor
Session H: Biochemistry	11:00 - 12:20	North Glacier
Session I: Fine Arts and Humanities	11:00 - 12:00	South Glacier
Session J: Social Sciences	11:00 - 12:30	North Voyageurs
Session K: Economics	11:00 - 12:00	South Voyageurs
Session L: Geography	11:00 - 12:30	Lady Slipper
Session M: Behavioral Studies	11:00 - 12:00	Mississippi
<b>Keynote Address and Reception</b>		
Session N: Troy Rogers, Ph.D. candidate <i>Not either/or but both/and: compositional and performative gestures in the spaces between complementary domains</i>	12:30 - 1:30	Little Theatre
Reception	1:30 - 2:00	Theatre Lounge
<b>Afternoon Presentations (Sessions O-T)</b>		
Registration for Presenters and Project Sponsors	12:00 - 1:45	2nd Floor
Session O: Biological Studies	2:00 - 3:20	North Glacier
Session P: Geography	2:00 - 3:30	Lady Slipper
Session R: Science and Engineering	2:00 - 3:20	Granite
Session S: SCSU Survey	2:00 - 3:30	Mississippi
Session T: All Disciplines (Poster Session)	3:00 - 4:50	Ballroom
<b>Evening Presentations (Sessions U-W)</b>		
Registration for Presenters and Project Sponsors	4:00 - 4:45	2nd Floor
Session U: Teaching English as a Second Language	5:00 - 6:20	North Glacier
Session V: Economics	5:00 - 6:00	South Glacier
Session W: Science and Engineering	5:00 - 6:20	Lady Slipper
<b>Reception and Student Award Ceremony (Session X)</b>		
Reception Open to All Attendees	6:45 - 7:15	Cascade
Student Awards Ceremony	7:15 - 8:15	Cascade



# Program

**Session A: All Disciplines**

**Room: Ballroom**

**Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

Time	Presentation Index	Presenter(s)	Title
9:00	A1	Richards, Davian Neddermeyer, Andrew Romero Sanchez, Martin Herold, Wesley	Unattended Ground Vehicle (UGV)
9:00	A2	Henry, Elizabeth	Tanning Beds and Skin Cancer
9:00	A3	Johnson, Mary	Creating a Wetland Plant Community
9:00	A4	Schmelzer, A.C.R.	Economic Development and Democracy in Modern China
9:00	A5	Achman, Amber	Growth Curve Analysis of INVSc. 1 Expressing Tgcycl1, TgCyc2, and TgCRK2 from <i>Toxoplasma gondii</i>
9:00	A6	Hill, Jennifer	The Digitization of Information
9:00	A7	Normand, Kevin	Interpretation of Terraces and Profile of the South Two River, A Tributary of the Mississippi
9:00	A8	Humbert, Crystal Swenson, Clyde Frost, Marisa Autio, Cheryl Euteneuer, Kari Kok, Kris Christoffer, Holly Sigfrid, Hilary	Willmar East African Community: Nutrition and Health Assessment 2005
9:00	A9	Grant, Rainer	Mutagenicity of Ethylene Glycol Ethers Aldehydes and Acids
9:00	A10	Mulliner, Kristi Mehr, Angela Fowler, Denise Lahr, Angeline	Tobacco Education in Mille Lacs County Schools
9:00	A11	Wong, Kuan Shen	DNA Sequencing of <i>Toxoplasma gondii</i> Using Plasmid Vector
9:00	A12	Penniston, Ian	Isolation and Characterization of Aldehyde Dehydrogenase in Fathead Minnow Tissue
9:00	A13	Metzker, Amber	The Air-Sea Interaction on the Great South Bay

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**Session A: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	A14	Neff, Kathrine Kortan, Cristin Fiedler, Emily Tompsonowski, Kristi Brost, Melissa Quernemoen, Kari Mayers, Angela VanBlarcom, Noelle	Immunization Levels Among Childcare Settings
9:00	A15	Pallesen, Terry	Alternative Foods, Medicines and Therapies
9:00	A16	Sills, Laura	Effects of Herbal Treatments on Blood Pressure of Rats
9:00	A17	Miskanis, Sarah Braulick, Justin Trisko, Jenna Rock, Monica	Food Allergies and the Relationship to Emotional and Physical Health
9:00	A18	Wang, Tingting Stephenson, Jeffrey	ESL Student's Preference in Writing Center Tutors -- Native Tutor VS. Non-Native Tutor
9:00	A19	Nelsen, Eric Hanson, Erin	Long Term Metabolic and Health Effects of Ending a Low-Carbohydrate, High-Fat, High-Protein Diet in <i>Mus musculus</i>
9:00	A20	Grieme, Laura Bevis, Cheryl Schwiesow, Jessica Warn, Allison Mymryk, Karlie Carlson, Stacey Bistodeau, Jessica VanVooren, Kim Krause, Laura Olson, Paul Holtz, Angela Johnson, Kari	Performance Appraisal in Speech-Language Pathology
9:00	A21	Hjelm, Adam	Effects of Saint Cloud State's Alcohol Education Class on Reducing High-Risk Alcohol Behaviors and Choices
9:00	A22	Meyer, Holly	The Effect of Different Media on <i>E. coli's</i> Light and Cell Density
9:00	A23	Worden, Danielle	The Design and Synthesis of a Chiral RAS Farnesyl Protein Transferase Inhibitor
9:00	A24	Williams, Benjamin Meemken, Amanda Jones, William	Project AURORA

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**Session A: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	A25	Thomas, Shauna	Implicit Attitudes Toward Gender and Emotion
9:00	A26	Dunkel, Anthony	Calculating the Short-Range Accuracy of MOS Forecasts for 3 Midwest Cities During Meteorological Winter
9:00	A27	Gahlon, Hailey	Design and Synthesis of Novel FPTase Inhibitors
9:00	A28	Bushkofsky, Justin	Chemistry of Vanadium-Flavonoid Complexes: Potential Antidiabetic Properties
9:00	A29	Dehmer, Kevin	Minnesota School Performance: A Look at Schools and Home Life
9:00	A30	Eisterhold, Joe	Evaluation of Control Methods on Invasive Plant Species at Two Minnesota Military Training Sites
9:00	A31	Forsman-Earl, Cynthia	The Effect of Retinoid Antagonists on <i>Xenopus laevis</i> Development.
9:00	A32	Pradhananga, Amit	Soil Amino Sugar Nitrogen Concentration of Residential Lawns, St. Cloud, MN
9:00	A33	Kolt, Lysianne	Teaching Pre-writing Skills to a Child with Autism: Tripod Grips and Drawing Lines
9:00	A34	Herring, Lindsey Huynh, An Christoffer, Heather Edelbrock, Heidi	Nutritional Assessment in Stearns County Public Schools
9:00	A35	Neznik, Bradley	Slime Mold and Fuzzy Logic
9:00	A36	Kiffmeyer, Shannon Arickx, Sara	Emergency Preparedness Planning on the Mille Lacs Lake Reservation: Perceived Importance and Presence of Organizational and Community Emergency Plans
9:00	A37	Jacobson, Brooke	Comparing C-Start Performance in Two Species of Mullet
9:00	A38	Lentz, Katharine	Novel Latent Fingerprinting Techniques Based on Binding/Complex Formation with 8-Quinolinol Sulfate
9:00	A39	Kummer, Elizabeth	Inferring Diet from Dental Microfossils

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**Session A: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	A40	Wilant, Laura	Like mother, like daughter? An Analysis of Proteins Expressed Between Parent and Mutant Phenotypes of <i>Candida albicans</i> Strains Through SDS-PAGE
9:00	A41	Chowdhury, Zinat	In Vitro Morphogenetic Studies and Mass Propagation of the Ornamental Fern <i>Cheilanthes farinosa</i>
9:00	A42	Mondloch, Joseph	Solvent Mediated Polymorphic Transformation
9:00	A43	Yost, Chad	Diagnostic Phytolith Evidence for the Presence and Abundance of Wild Rice ( <i>Zizania sp.</i> ) in Kathio State Park, Minnesota
9:00	A44	Brom, Alison Balk, Rachel	Undergraduate Research on Sexual Assault at a Private College
9:00	A45	Witthus, Joel Barthel, David	Portable Gaming Device
9:00	A46	Kraetsch, Cassie	Can Stable Isotope Chemistry Distinguish Between Antarctic Krill in the Southern Ocean?
9:00	A47	Honeck, Jason Dircks, April	Railroad Snow Melting Monitoring System

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**Session B: Science and Engineering****Room: North Glacier****Moderator:** *Mark Schmidt, Assistant Professor of Business Computer Information Systems*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	B1	Nordby, Mark	Performance of Routing Versus Switching on a State of the Art Switch
9:20	B2	Knepper, Sarah	A Mathematical Framework for Equivalent Real Formulations
9:40	B3	Harris, Daniel	Easy DB
10:00	B4	Peichel, Steve	Computer Controlled Fiber-Optic Gyroscope
10:20	B5	Cediel, Roberto	Biomechanics of Red and White Muscle Distribution in Two Species of Climbing Hawaiian Gobies

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**Session C: Spanish** (Presentations will be in Spanish) **Room: South Glacier****Moderator:** *Luz Consuelo Triana-Echeverría, Assistant Professor of Foreign Languages*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	C1	Forseth, Mallory	La Evolución Social y Femenina en <u>La Plaza del Diamante</u> (Social and Feminine Evolution in the <u>Plaza del Diamante</u> )
9:20	C2	Egan, Lindsey	Bartolome de Las Casas; <u>Apostol de los Indigenas</u> (Bartolome de Las Casas: <u>Apostle of the Natives</u> )
9:40	C3	Nelson, Quinn	Investigación sobre la novela <u>El sur</u> de Adelaida García Morales, de la Generación Testimonial de España (Investigation of the Novel <u>El Sur</u> by Adelaida García Morales, of the Spanish Post-War Generation)
10:00	C4	Peinovich, Brooke	Salvador Dali: A True Surrealist

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**Session D: Transportation** **Room: Granite****Moderator:** *Randy Evans, Director, Instructional Technologies and Infrastructure Services*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	D1	Shatek, Nick Johnston, Justin Dawson, Charlie	FSAE Race Car
9:20	D2	Webber, Grant	Air Cargo Security
9:40	D3	Du Lac, Shawn	National ID
10:00	D4	Lundorff, Kevin Lesniak, William Olson, Matt	Airboat Brake System

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**Session E: Behavioral Studies** **Room: North Voyageurs****Moderator:** *Margaret Pryately, Professor of Communication Studies*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	E1	Peterson, Debbie	Advertising Enthymemes
9:20	E2	Juma, Peter	Multicultural Student Service (MSS) at St. Cloud State University
9:40	E3	Chesborough, Sarah Wren, Miranda	"What's Your Type" American Red Cross Blood Drive

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**Session F: Linguistics and Humanities****Room: South Voyageurs****Moderator:** *Kristian Twombly, Assistant Professor of Music*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	F1	Amundson Cissé, Adelle	An Interlinguistic Study of Bambara and Dyula
9:20	F2	Elmeski, Mohammed	A Contrastive Study of Arabic and English Rhetoric
10:00	F3	Ryan, Michael	German Final Project
10:20	F4	Kirsch , Jamie	Through the Eyes of Institutions: Development as a Paradigm

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**Session G: Natural Sciences****Room: Oak****Moderator:** *Joyce M. Simones, Associate Professor of Nursing Science*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
9:00	G1	Koch, Jason	Education as Environmental Stewardship: Developing Inquiry-based Learning Modules for High School Science Teachers
9:20	G2	Curtin, Michael	Intra and Interspecific Evolutionary Patterns for Three Endemic Diatom Species from Lake Baikal
9:40	G3	Swingley, Lucas	Synthesis and Characterization of Vanadium-3-hydroxyflavone Coordinated Compounds; Role as Potential Diabetic Agents
10:00	G4	Roering, Andrew	Photochemistry of Aromatic Isothiocyanates: An Economical Synthesis of Phenyl Isocyanide
10:20	G5	Roiko, Marijo	Detecting Protein-Protein Interactions with the Yeast Two-Hybrid System

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**Session H: Biochemistry****Room: North Glacier****Moderator:** *Carol Mohrbacher, Director, The Write Place*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	H1	Salad, Mohammad	Cloning and Characterization of Class 9 Human Aldehyde Dehydrogenase (ALDH9A1)
11:20	H2	Gross, Aaron	Synthesis, Purification, and Characterization of Ethylene Glycol Ether Aldehydes via Sern Oxidation
11:40	H3	Ghose, Shourjo	Genomic Analysis of Human Breast Adenocarcinoma MCF-7
12:00	H4	Marine, Sasha	Breast Carcinoma Resistance to <i>Ottelione A</i> : Translocation and/or Over-Expression of MAD1 and MAD2 Proteins

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**Session I: Fine Arts and Humanities****Room: South Glacier****Moderator:** *Judy Dorn, Professor of English*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	I1	Glynn, Alexandra	Milton's Rhetoric: Words and Signs and Wonders
11:20	I2	Schleeter, Stacy	Native Americans' Reproductive Justice
11:40	I3	McCarron, Charlie	<i>The Singing Bone for Orchestra</i>

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**Session J: Social Sciences****Room: North Voyageurs****Moderator:** *Sarah Speir, Director of International Student and Scholar Services*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	J1	Dwyer, Cecelia	Body Image, Media, and Sexuality in Older Women
11:20	J2	Sherman, Ruth Ballengee, Mary	Empowering Women Through Feminist Research
11:50	J3	Vang, Wang	Hmong: Bride Price, Kinship, and Marriage
12:10	J4	Rogers, Jordan	Visual Tourism

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**Session K: Economics****Room: South Voyageurs****Moderator:** *Susan Motin, Associate Professor of Learning Resources and Technology Services*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	K1	Lugovskyy, Oleksandr	Measuring Risk Aversion: Hypothetical Versus Real Decisions
11:20	K2	Deters, Travis	Leadership in Groups: An Experimental Study
11:40	K3	Zabka, Matthew	Does Funding Matter in Education?

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**Session L: Geography****Room: Lady Slipper****Moderator:** *Gareth John, Assistant Professor of Geography*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	L1	Wood, Heidi	The Decline of Resorting in Minnesota
11:15	L2	Thompson, Bradley	Analysis of Fuel Economy for MN Vehicles with Critical Habitat Plates
11:30	L3	Obermoller, Jonathan	Geography Awareness
11:45	L4	Terry, John	Geographic Knowledge of the Middle East
12:00	L5	Anissa, Kelly	Iconography of Landscape in the Minnesota State Flag and Commemorative Quarter
12:15	L6	Sexton, Daniel	An Analysis of the Socioeconomic Stratification of New Urbanism Development

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**Session M: Behavioral Studies****Room: Mississippi****Moderator:** *Joe Melcher, Associate Professor of Psychology*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
11:00	M1	Lamo-Nelson, Teresa	Assessing Cognitive Representations of Number Through Excitatory and Inhibitory Priming
11:20	M2	Allen, Seth	Review of Therapies for the Treatment of Multiple Sclerosis
11:40	M3	Murphy, Angela	Families with Adopted Children

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<b>Session N: Keynote Address and Reception</b>	<b>Room: Little Theatre</b>
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**Moderator:** *Roland Specht-Jarvis, Dean of the College of Fine Arts and Humanities*

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12:30 – 1:30	<b>Troy Rogers</b>	<b>Not either/or but both/and: compositional and performative gestures in the spaces between complementary domains</b>
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Troy Rogers is currently a Ph.D. candidate at the University of Virginia, pursuing a degree in Composition and Computing Technologies at the Virginia Center for Computer Music. He received his Masters in Music, Intermedia Music Technology, from the University of Oregon in 2005. He received his Bachelor of Arts in Music Composition and Theory from St. Cloud State University in 2000.

While completing his master's degree, Rogers spent time as a composer/researcher at Simon Fraser University's Sonic Research Studio exploring acoustic ecology and soundscape composition. More recently, at the University of Oregon, Department of Computer and Information Sciences' Cognitive Modeling and Eye Tracking Laboratory, he collaborated with researchers Anthony Hornof and Tim Halverson to create an audio/visual piece controlled by eye movements.

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1:30 – 2:00	<b>Reception</b>	<b>Room: Little Theatre Lounge</b>
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<b>Session O: Biological Studies</b>	<b>Room: North Glacier</b>
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**Moderator:** *Michael Gorman, Assistant Professor and Reference Librarian*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
2:00	O1	Rohde, Scott	Effects of Military Activity on Vegetation and Wildlife at Camp Ripley
2:20	O2	Kronland, William	Effects Of Post-Fire Fuels Treatments On Vertebrate Communities In Southeastern Montana
2:40	O3	McCarthy, Clara	Distribution and Habitat Associations of Ferruginous and Swainson's Hawks in North Dakota
3:00	O4	Allen, Angela Loes, Tim	Investigation of Intersex in Mississippi Fishes

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**Session P: Geography****Room: Lady Slipper****Moderator:** *Jim Knudson-Kolodzne, Director, American Indian Center*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
2:00	P1	Hessler, Franklin	Music Festivals in the Minnesota North Woods
2:15	P2	Holper, Brenton	Green Urbanism within Minnesota
2:30	P3	Chad, Miller	Threats to the Vegetation of the Nerstrand Big Woods State Park: A Case Study of The Minnesota Dwarf Trout Lily
2:45	P4	Khadka, Siddarth	The Population Structure of the One Horned Rhinoceros in Nepal
3:00	P5	Chand, Smriti	Use of Topography in the Maoist Uprising in Nepal
3:15	P6	Denne, Jessica	Changing North Shore

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**Session R: Science and Engineering****Room: Granite****Moderator:** *Gloria Melgarejo, Assistant Professor of Foreign Languages*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
2:00	R1	Willenbring, James	Sparse Non-PDE Generated Matrix-vector Product Kernel Performance Enhancement
2:20	R2	Krekelberg, Elizabeth	Interaction of Ruthenium Complexes with DNA
2:40	R3	Grove, Kent	Fluoxetine Exposure Experiment
3:00	R4	Thao, Pheng Yang, Data Niemuth, Kasey	Biomedical Sensors

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**Session S: St. Cloud State University Survey****Room: Mississippi****Moderator:** *Maria Mikolchak, Associate Professor of Foreign Languages*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
2:00	S1		SCSU Survey Coverage of Fall 2005 Statewide Survey
		Tim Ehlinger Heather Schwebach	<i>Abortion</i>
		Elizabeth Walters Sara Lohrman	<i>Hurricane Katrina/Cell Phones</i>
		Nicole Severson Brittany Speich	<i>Capital Punishment</i>
		Matt Bromelkamp Ngoc Phan	<i>Feeling Thermometer</i>
		Will Floersheim Jackie Swanson	<i>Political Questions</i>

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**Session T: All Disciplines****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
3:00	T1	Walters, Elizabeth	Statistics and Baseball
3:00	T2	Christian, Curt	DNA Sequencing of <i>Toxoplasma gondii</i>
3:00	T3	Kirabo, Annet	The Role of Leptin and N-methyl-D-aspartate (NMDA) Receptor Activation in Linking Nutrition to Reproduction
3:00	T4	Jessen, Jen Olson, Kari Ratike, Dana Ouke, Nicole Besserra, John Wirth, Justin Ashfeld, Lisa	Meeker County Elementary Parent Assessment
3:00	T5	Rutledge, Jordon Miles, Vincent Olah, Shannon	Capture of Attention: Hemispheric Differences
3:00	T6	Carlson, Shawn Kirabo, Annet	Effects of Verapamil and EDTA on Pancreatic GnRH Secretion
3:00	T7	Hoffmann, Todd	DNA Sequencing of <i>Toxoplasma gondii</i> Genes Using Plasmid Vectors
3:00	T8	Huls, Ross	Interpretation of Terraces and Profile of the Sauk River, a Tributary of the Mississippi

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**Session T: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
3:00	T9	Peterson, James	A Limited Climatology of the Capping Inversions in Nocturnal Thunderstorms
3:00	T10	Ellingson, Chris	The Use of Cadavers, Dead Animals, and Live Animals in Studying Anatomy
3:00	T11	Potocek, Meggan	Using Headspace-Solid Phase Microextraction-Gas Chromatography to Measure Trihalomethane Concentrations in Drinking Water
3:00	T12	Potocek, Meggan	Analysis of Flavor Components in Royal Gala and Granny Smith Apples Via Single-Drop Microextraction and Solid-Phase Microextraction
3:00	T13	Lyon, Catherine	Pharmacological Effects of <i>Cimicifuga racemosa</i> on Rat Uterine Contractility
3:00	T14	Plourde, Robert	Red and White Muscle Fiber Distribution in Two Species of Climbing Hawaiian Freshwater Fishes ( <i>Gobiidae</i> )
3:00	T15	Donnay, Brent Girtz, Robert	Racial Profiling and the St. Cloud Police Department: Statistical Analysis
3:00	T16	Vlazny, Danielle	Development of a Robust System for PCR Labeling Probes for Northern Blots to Determine the Effect of Ethylation on Transcriptional Recovery in the Yeast <i>S. Cerevisiae</i>
3:00	T17	Dillman , Allissa	Cloning and Characterization of Polymorphic Class 3 Aldehyde Dehydrogenase
3:00	T18	Hansen, Ashley	Sauk River Watershed Water Quality Analysis
3:00	T19	Storlien, Joseph	Lawn Turf Response to Soil Amino Sugar Nitrogen Concentration
3:00	T20	Pairolero, Amber	Assessment of Auditory Skills in Typically Developing Children
3:00	T21	Kurtz, Quinn	<i>Toxoplasma gondii</i> Gene Expression
3:00	T22	Piotrowski, Aaron Petersen, David	Characterization of Aldehyde Dehydrogenase in <i>Xenopus laevis</i> Embryos
3:00	T23	Conroy, Kathryn	Student Knowledge of Antibiotic Resistance
3:00	T24	Pradhananga, Amit	UV Transmission Through Plastics: Implications in Water Purification

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**Session T: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
3:00	T25	Hall, Bruce	Gasoline Pricing/Renewable Fuels Survey Results
3:00	T26	Pundsack, Thomas Smith, Brandon Gesmundo, Matthew	Time of Flight Charge Mobility Measurements in Organic Semiconductors
3:00	T27	Gikineh, Alima	Assessing the Effects of Biogenic Silica Binding to 4-nonylphenol in Diatoms
3:00	T28	Heisick, Kelly	Herbal Effects on Rat Trachea
3:00	T29	Kohout, Denise Hasbargen, Lisa Rudolph, Sarah Endres, Stephanie	Physical Education in Stearns County Schools
3:00	T30	Southworth, Steven Flint, Aaron	Degenerate Four Wave Mixing Laser Spectroscopy of Organic Materials
3:00	T31	Maxwell, Kathryn	Amino Sugar Nitrogen Leachate Study
3:00	T32	Sun, Kyung Everaerts, Ken	Characterization of Spin Coated Polymer Thin Films
3:00	T33	Riley, Nathaniel	Analytical Matrixes in Matrix-Assisted Laser Desorption/Ionization Mass Spectrometry
3:00	T34	Daun, Reesa	The Effects of Script Training in People with Chronic Aphasia
3:00	T35	Henning, Gregory	First Complete Laboratory Demonstration of an All-Reflecting Real Fringe Interferometer
3:00	T36	Nordberg, Nathaniel	What do the Residents of Annandale and Maple Lake Believe in Having a Joint Wastewater Treatment Facility?
3:00	T37	Galzki, Jacob	Analysis of Nutrient Loading and Fecal Coliform Contamination of the Sauk River
3:00	T38	Dreis, Bradley	Techniques for Assessing Serotonin Levels in the Central Nervous System: Applications for Neural Prostheses
3:00	T39	Harmon, Joe Burckhard, James	Training Impulse is Lower for Alpine Skiers when Consuming a Carbohydrate-Protein Gel
3:00	T40	Modi, Rupesh Sjogren, Abbey	Purification and Crystallization of Human Aldehyde Dehydrogenase-1A1 in the Presence of Resveratrol

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**Session T: All Disciplines, cont.****Room: Ballroom****Moderator:** *Jennifer Grasswick, Information Officer, College of Science and Engineering*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
3:00	T41	Rajhkowa, Rupsmita Vraa, Josh Stambaugh, Morgan Fetterman, Adam Priebe, Matthew	Off the Job Interaction and Work Outcomes
3:00	T42	Singh, Sushil Lei, Peng	Wireless Sensor Network
3:00	T43	Bauer, Adam	Control of Music on Job Satisfaction and Productivity
3:00	T44	Labyed, Yassin Qureshi, Umer Gabel, Craig	Surveillance Eye
3:00	T45	Tu, Liang Nunn, Robert	Group Collection for a Wireless Sensor Network
3:00	T46	Klande, Derek	The Management of Urban Deer in St. Cloud, MN
3:00	T47	Tipler, Lindsey	Community Watershed Quality: A Community Updated Consistently
3:00	T48	Rosten, Robert	Native American Frybread: Commodity Forced Upon Culture

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**Session U: Teaching English as a Second Language****Room: North Glacier****Moderator:** *Marya Deutsch-Dwyer, Professor of English*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
5:00	U1	Bhutia, Choden	Group Work and ESL Students- Peer Reviews and their Effectiveness in Writing
5:20	U2	Fonken, Gael	Using Trickster Game Theory to Explain Horizontal Writing Styles: How to Dialogue with Monologue
5:40	U3	Rosenow, Lisa	An Analysis of Social Identity Among University-Bound English Language Learners
6:00	U4	Timp-Pilon, Michele Slee, Heather	Tutoring Methodology: Who Holds the Power?

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**Session V: Economics****Room: South Glacier****Moderator:** *Michael Pickle, Assistant Professor of Special Education*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
5:00	V1	McConnell, Timothy	Liberal Abortion Laws; a Pull Factor for Mexican Immigration to the US?
5:20	V2	Dennie, Kimberly	The “Coalition of the Willing” Supporting the War in Iraq: Factors Influencing a Country to Join
5:40	V3	Lugovskyy, Oleksandr	US Trade Deficit With China: Whose Fault Is It Anyway?

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**Session W: Science and Engineering****Room: Lady Slipper****Moderator:** *Mohammad Mahroof-Tahir, Associate Professor of Chemistry*

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<b>Time</b>	<b>Presentation Index</b>	<b>Presenter(s)</b>	<b>Title</b>
5:00	W1	Odumade, Oluseun	A Generalized Forced Quantitative Randomized Response Model
5:20	W2	Oerter, Dominic	Alexandria Extrusion Xpress Redesign Project
5:40	W3	Terry, Jay	Piper Sanctum Natural Product Synthesis
6:00	W4	Wong, Wai	Neurotransmitter Effects on Hypothalamic and Pancreatic GnRH Secretion

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**Session X: Reception and Student Awards Ceremony****Room: Cascade****Moderator:** *Richard Rothaus, Assistant Vice President for Research and Faculty Development*

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<b>Time</b>	<b>Title</b>
6:45	Reception Open to All
7:15	Student Awards Ceremony
	2006 Best Poster Awards
	College of Science and Engineering Denise M. McGuire Student Research Awards
	Student Research Funds Recognition
	Student Passport Incentives

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# **Student Awards Ceremony**

## **Student Research Funds**

The Student Research Fund, which was established in 2005, is intended to support academic research and creative activity by St. Cloud State University undergraduate and graduate students under the direction of a St. Cloud State University faculty member. Since being established, 85 students have received an award. Students have used the funding to pay for needed supplies and materials, travel to conduct research, and travel to present at academic conferences.

## **College of Science and Engineering Denise M. McGuire Student Research Awards**

At the August 29, 2002, College of Science and Engineering (COSE) Recognition Banquet it was announced by then Dean A.I. Musah that the COSE Student Research Awards were to be renamed the Denise M. McGuire Student Research Awards (DMMSRA). The award was renamed in memory of Dr. McGuire for her long-standing interests in student performance and development and for her outstanding service to the college and the university. The purpose of the DMMSRA is to recognize and honor students engaged in the college initiative of Student-Faculty Collaborative Research. Dr. McGuire passed away on March 17, 2002.

## **2006 Best Poster Awards**

Posters presented at this year's Colloquium are eligible for the Best Poster Award. Posters will be judged on visual effectiveness, language appropriateness, originality/creativity, and content. A total of four awards will be given – one winner (\$500) and three honorable mentions (\$250).



# Abstracts

Session A: All Disciplines

Room: Ballroom

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## Unattended Ground Vehicle (UGV)

The objective of this project was to design, develop, and build an unattended ground vehicle (UGV). The UGV will be used as a transport to carry multiple sensors which monitor the surrounding environment. The sensors however are simply deployed and retrieved by the UGV and are not actually the concern of this project. Control of the UGV is done from a remote location so different forms of navigation are present on the vehicle. Some methods of navigation used are GPS, digital compass, and video.

**Presentation Index:** A1

**Time:** 9:00

**Department:** Electrical and Computer Engineering

### Student Presenter(s)

Richards, Davian  
Neddermeyer, Andrew  
Romero Sanchez, Martin  
Herold, Wesley

### Project Sponsor(s)

Petzold, Mark  
Wilson, Mark

## Tanning Beds and Skin Cancer

What do college students know about the dangers of skin cancer associated with tanning bed use? Should tanning salons be required to provide information about the risks of skin cancer associated with tanning bed use? Do students who use tanning beds want to read information about skin cancer risk? These questions were addressed in a survey given to students at St. Cloud State University.

**Presentation Index:** A2

**Time:** 9:00

**Department:** Biological Sciences

### Student Presenter(s)

Henry, Elizabeth

### Project Sponsor(s)

Minger, Mark

## Creating a Wetland Plant Community

As long as wetlands continue to be drained, wetlands will need to be restored or created in mitigation. Among the many issues connected to wetland restoration/creation is the establishment of a suitable wetland plant community. The objective of my research is to test a new seed product, the SubmerSeed™ against traditional seeds and the natural seed bank and assess its effectiveness in establishing a desirable wetland plant community on a manmade lake that has yet to establish one. The SubmerSeed is a composite material with a dense core, viable seeds and clay rolled into a ball. The advantage of planting unstratified seeds in the fall versus stratified seeds in the spring will also be tested. The fall planting was completed in October, 2005. There will be a spring planting in May of 2006. Data will be collected on biomass, stem counts and diversity in the fall of 2006. This data will be analyzed and the results published in the spring of 2007.

**Presentation Index:** A3

**Time:** 9:00

**Department:** Biological Sciences

### Student Presenter(s)

Johnson, Mary

### Project Sponsor(s)

Arriagada, Jorge

**Economic Development and Democracy in Modern China**

In the past several centuries mankind has seen the conception of liberty and with it democracy. Respect for the uniqueness of the individual and the human soul has given rise to much innovation and creativity, allowing man to further realize the human capacity for ingenious. Yet, as globalization seeks to fully realize itself, western society faces a crisis: the potential end of the third wave of democracy. In fact, it could be just the opposite. This is epitomized in the case of China. This communist nation—ostensibly considered the antithesis of democracy by many westerners—now begins to show that non-democratic nations may well become economically sound. Indeed China, along with India, is on its way to becoming the next world superpower. This is a make or break point for democracy. Will Communism adapt to capitalism in such way as to overtake democracy as the status quo? Will China's communist regime eventually suppress liberalization domestically as western thought permeates it via economic advancement? Will China become a democracy? Liberal Democracy? Or a liberal autocracy under a communist regime? Whatever the case, the human condition will certainly be altered by the outcome of this situation.

**Presentation Index:** A4**Time:** 9:00**Department:** Political Science**Student Presenter(s)**

Schmelzer, A.C.R.

**Project Sponsor(s)**

Parikh, Manju

**Growth Curve Analysis of INVSc. 1 Expressing Tgcyc1, TgCyc2, and TgCRK2 from *Toxoplasma gondii***

*Saccharomyces cerevisiae* strain INVSC1 was used as a surrogate genetic host for three *Toxoplasma gondii* cell cycle control genes. By inserting three *Toxoplasma* genes: TgCyc1, TgCyc2, and CRK2 into strains of INVSC1 using a vector, the expression in the cell cycle can be measured and a growth curve of these three regulatory genes can be formed. Two sets of data will be obtained, one set by growing the strains in glucose media, and the next set by growing the strains in galactose media. In glucose media the genes are turned off, and in galactose media the genes are turned on. The initial steps in this experiment involved inoculating (in duplicate) a single colony from each glucose plate containing one of the three genes in question. The samples were then placed in a shaker bath at 30°C starting at 12:00 pm and the optical densities checked every three hours. Nine hours after the first incubation a second set of duplicates was made and the optical densities checked. The optical densities were taken until all the tubes reached an optical density of 2.00. This experiment was then completed again in galactose media. Once the experiments were completed a growth curve was made for each media showing the lag, log, and stationary phases for each gene. The findings from this experiment will further knowledge concerning cell cycle regulation in *Toxoplasma gondii* and will aid in the future work for the extraction and purification of the expressed proteins.

**Presentation Index:** A5**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Achman, Amber

**Project Sponsor(s)**

Kvaal, Christopher

**The Digitization of Information**

The information age has changed the role of the library. Prior to the digital revolution, librarians bridged the gap between print resources and the information seeker. With the digitization of information, the computer interface stands in this gap between the librarian and the patron. This phenomenon has significantly impacted the role of the library, the librarian, the computer interface, and the information seeker. The physical space of the library is being threatened as more and more users are accessing information from their home computers. Libraries have had to adapt to this change by taking on the role of a collaborative laboratory also known as a collaboratory where scholars from various disciplines can come together to create knowledge. Librarians are spending less time with physical patrons and more time answering virtual reference questions. This is beginning to change the role of a librarian from a direct to an indirect service profession. It also provides greater opportunity for librarians to author information through contributions to in-house electronic databases that reach a global audience. Search engines are becoming the most common form of information searching and retrieval. The interface has had to change to accommodate the user who may have little knowledge of information systems. Finally, users are often overwhelmed with vast amounts of information available in digital format. Critical thinking and analytical skills have become even more crucial as users must independently decide where to access information, what to internalize, and what to ignore.

**Presentation Index:** A6**Time:** 9:00**Department:** Information Media**Student Presenter(s)**

Hill, Jennifer

**Project Sponsor(s)**

Motin, Susan

**Interpretation of Terraces and Profile of the South Two River, a Tributary of the Mississippi**

South Two River is a tributary on the west side of the Mississippi River in Minnesota. The stream profile, surficial geologic units, and bedrock geology were examined, and terraces were identified from topographic maps. The order of geologic events was evaluated. South Two River flows to the northeast and is surrounded by quaternary surficial material such as glacial outwash composed of sand, gravelly sand, cobble gravel that is reworked superior lobe till, peat, and Mississippi River alluvium. One terrace is present 1090 ft. to 1080 ft. high where the river drops sharply before it draining into the Mississippi river. This river terrace is most likely a terrace of the Mississippi and not a terrace of South Two River. The presence of one sole terrace at the confluence with the Mississippi contrasts with rivers to the south, some of which display as many as 5 terraces. Depth to bedrock ranges from 30 ft. to 130 ft. based on the Minnesota County Well Index and the Stearns County Geologic Atlas. Bedrock is mostly mottled red, green and brown shale with white sandstones. In another area undivided Gneissic rocks are present that are early to mid-Archean in age. The final bedrock is the Little Falls Formation which is light to dark grey, quartz rich shale, argillite and quartz wacke, green schist to middle amphibolite.

**Presentation Index:** A7**Time:** 9:00**Department:** Earth and Atmospheric Sciences**Student Presenter(s)**

Normand, Kevin

**Project Sponsor(s)**

Pound, Kate

**Willmar East African Community: Nutrition and Health Assessment 2005**

Minnesota is home to the United States' largest Somali population and there is a need for accessible and understandable health information. A community assessment was conducted of the Somali population in Willmar, MN of the health needs and practices in regards to asthma, diabetes, obesity and nutrition. A convenience sample of 41 Willmar Somali community members participated in a descriptive, non-probability 26-item survey regarding these health needs. The assessment determined the current dietary intake of Willmar Somali community members utilizing the National Food Guide Pyramid and measured the health knowledge, treatment, and incidence of asthma, diabetes, and obesity. The community assessment revealed a lack of knowledge of the Somali population in regards to asthma and diabetes and there was evidence of inadequate dietary intake from the basic food groups. Over half of those surveyed, 51.22%, lacked knowledge of asthma, 60.98% lacked knowledge of diabetes and the vast majority, 95.13%, consumed less than the recommended servings of carbohydrates. These findings imply there is a need for health information regarding asthma, diabetes, obesity, and nutrition for the Somali community.

**Presentation Index:** A8**Time:** 9:00**Department:** Nursing Science**Student Presenter(s)**

Humbert, Crystal  
Swenson, Clyde  
Brost, Marisa  
Autio, Cheryl  
Euteneuer, Kari  
Kok, Kris  
Christoffer, Holly  
Sigfrid, Hilary

**Project Sponsor(s)**

Lenz, Brenda  
Johnson Warner, Susan

**Mutagenicity of Ethylene Glycol Ethers Aldehydes and Acids**

This study examines the mutagenicity of 2-butoxyethanal (2-BAL) and 2-propoxyethanal (2-PAL) on *Salmonella typhimurium* using the Ames Test. Both 2-BAL and 2-PAL are believed to cause tumor formation in animal subjects. If the test compounds were positive for mutagenicity, it would be expected to see at least twice the amount of revertant colonies as compared to the spontaneous revertants. A positive test would give merit to further investigation of these chemicals.

**Presentation Index:** A9**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Grant, Rainer

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Tobacco Education in Mille Lacs County Schools**

The purpose of this research was to determine the type and extent of tobacco education provided to students in seventh through twelfth grade attending school in Mille Lacs County. Seven health educators were selected using a non-probability sampling technique to complete a tobacco education survey. The survey developed for this research consisted of seven questions using a Likert Scale and four questions regarding demographic data. The surveys were personally delivered to three health educators in the Milaca High School, one health educator at Isle High School, one health educator at Onamia High School, and one health educator at Princeton Middle and High School. Findings: The data confirms that tobacco education is predominantly taught by health educators to students in seventh, eighth, and tenth grade. Despite tobacco education that is provided, students are not always taught about the negative effects of tobacco use. Students in ninth, eleventh, and twelfth grades are not taught about the negative effects of tobacco or peer pressure and tobacco use. Results of this study indicate education in regards to second-hand smoke is taught in seventh, eighth, and twelfth grade. Results also indicate eleventh and twelfth graders are not provided education regarding tobacco cessation techniques. In conclusion, we found tobacco education is predominantly taught in seventh, eighth, and tenth grade. Therefore more education is needed in ninth, eleventh, and twelfth grades to help reduce the amount of smoking in these impressionable age groups.

**Presentation Index:** A10**Time:** 9:00**Department:** Nursing Science**Student Presenter(s)**

Mulliner, Kristi

Mehr, Angela

Fowler, Denise

Lahr, Angeline

**Project Sponsor(s)**

Lenz, Brenda

Schorn-Rhoda, Mary Ann

**DNA Sequencing of *Toxoplasma gondii* Using Plasmid Vector**

*Toxoplasma gondii* is an obligate intracellular apicomplexan parasite. Its life cycle can be completed only in cats and other felids, which are the definitive hosts. Humans may become infected by contact with cat feces or by eating undercooked meat. In many mammals, *T. gondii* is known to be an important cause of abortions and stillbirths. A variety of neurologic symptoms, including incoordination, tremors, head-shaking, and seizures, have been described in humans, sheep, pigs, cattle, rabbits, and monkeys infected with *T. gondii*. Our objective is to sequence a portion of a cDNA library from *T.gondii*. Although the genome of *T.gondii* has been sequenced, this does not represent a picture of the expressed gene in *T.gondii*. Thus, each new cDNA sequenced is a small piece of the *T.gondii* gene expression puzzle. The protocol for DNA sequencing will be described, followed by novel DNA sequence obtained at SCSU.

**Presentation Index:** A11**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Wong, Kuan Shen

**Project Sponsor(s)**

Kvaal, Christopher

**Isolation and Characterization of Aldehyde Dehydrogenase in Fathead Minnow Tissue**

Ethylene Glycol Ethers are commonly used in various household cleaning products. Ultimately, these compounds end up in ditches and small streams that support small aquatic life such as fathead minnows and frogs. Ethylene Glycol Ethers produce toxic aldehydes during their metabolism. The aldehydes are oxidized to their corresponding acids by aldehyde dehydrogenases. The tissue distribution and identity of these aldehyde dehydrogenases in fathead minnows is not clear. Accordingly, as part of this project we have prepared tissue sections of fathead minnows and identified the localization of aldehyde dehydrogenases. This ongoing study will lead to isolation and characterization of these aldehyde dehydrogenases.

**Presentation Index:** A12**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Penniston, Ian

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**The Air-Sea Interaction on the Great South Bay**

The Great South Bay located between the barrier island Fire Island and the south shore of Long Island, NY is a unique shallow estuarine embayment with strong diurnal fluctuations in Sea Surface Temperature (SST). The results of a 2 month project present here, examined the atmospheric causes of diurnal SST patterns and the impact of dramatic changes in the sea surface temperatures on the Bay, specifically, the Latent and Sensible Heat Flux, Shortwave and Longwave Radiation, and the wind stress. A few extraordinary events where a warm up in the sea surface temperature of several degrees Celsius occurred right before a precipitous drop of the same magnitude gave us an understanding for the weather conditions that are favorable for a sea surface warm up and cool down. These data are critical for improving local weather forecasts, and for determining Bay-wide water circulation patterns. They also implicate the role of SST in the decline in hard clam populations, whose growth rates are impacted by elevated temperature as well as the presence of Brown Tides. The onset of the HAB Brown Tides is a reoccurring event in the Bay related to warm lower salinity waters.

**Presentation Index:** A13**Time:** 9:00**Department:** Earth and Atmospheric Sciences & Biological Sciences**Student Presenter(s)**

Metzker, Amber

**Project Sponsor(s)**

Colle, Brian, SUNY Stony Brook

Hansen, Anthony, SCSU

**Immunization Levels Among Childcare Settings**

The immunization records of a total of 234 children in the nine childcare centers in Wright County of Minnesota were reviewed. The quantitative descriptive chart review examined immunization records and determined whether they were current or lagging behind. The Wright County childcare centers were found to be behind state and national immunization recommendations. After reviewing the 234 immunization records, 38 percent were found to be behind with their immunization status.

**Presentation Index:** A14**Time:** 9:00**Department:** Nursing Science**Student Presenter(s)**

Neff, Kathrine  
Kortan, Cristin  
Fiedler, Emily  
Tomprowski, Kristi  
Brost, Marisa  
Quernemoen, Kari  
Mayers, Angela  
VanBlarcom, Noelle

**Project Sponsor(s)**

Lenz, Brenda

**Alternative Foods, Medicines and Therapies**

Conventional medical practice has contributed much in dealing with the health needs of Americans. Yet we are a nation in a health crisis with many chronic-disease fatalities each year. Alternative medical practice has contributed much in dealing with the needs of people around the world. The purpose of this study was to do a random survey of 100 members of Gold's Gym in Buffalo, Minnesota regarding their behavior and beliefs related to alternative foods, alternative medicines and alternative therapy. The survey showed that a significant number of respondents were knowledgeable about alternative foods, medicines and therapy. Many were actively involved in paying for alternative supplements and services. And three out of four respondents preferred that their medical doctor include alternative foods, medicines and therapy as a viable alternative for the treatment of ailments and diseases.

**Presentation Index:** A15**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Pallesen, Terry

**Project Sponsor(s)**

Simpson, Patricia

**Effects of Herbal Treatments on Blood Pressure of Rats**

Herbal supplements have been used as remedies for numerous purposes. There are countless herbs with traditional uses, but no current empirical research. Many of these are promising avenues for medical treatments. Research must be done for these to be documented as safe and effective in medicine today. In this laboratory we investigate the actions of herbal extracts on muscle contractility. Some of these extracts (blue cohosh, black cohosh, red clover, cramp bark) have been shown to stimulate or inhibit smooth muscle contractions. We are now testing effects of these extracts on other types of muscle. We will measure heart rate and blood pressure after intravenous exposure to specific extracts. Using adult rats, an artery will be catheterized with PE-50 tubing, flushed with heparin saline, and hooked to a blood pressure transducer. Pulse, systolic and diastolic pressure will be recorded using PowerLab instruments. Venous catheterization will allow for drug administration. Drugs will be dissolved in Dimethylsulfoxide for injection. These studies will not only address questions of muscle contractility of the heart and vasculature, but will also begin to address safety of administering these extracts in a mammalian model.

**Presentation Index:** A16**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Sills, Laura

**Project Sponsor(s)**

Tubbiola, Maureen

**Food Allergies and the Relationship to Emotional and Physical Health**

Autoimmune disorders research such as arthritis has begun to focus on a possible connection between people who do not ingest wheat (individuals with celiac disease or wheat gluten intolerance) and the decreased incidence of arthritis. Furthermore, psychological research has presented a possible relationship between individuals with chronic gastrointestinal ailments and an increased incidence of anxiety disorders. The main hypotheses of this study are that there will be a positive relationship between those with food allergies and anxiety disorders, as well as a positive correlation between the ingestion of wheat gluten and the incidence of arthritic symptoms. This study will focus on these relationships by presenting a survey to two groups. The control group will be Saint Cloud State University college students and the experimental group will be celiac disease support group members from around the Midwest. The predicted results of this study will demonstrate that a positive correlation was found between those with food allergies and anxiety symptoms. Also, those who do not ingest wheat gluten will be less likely to develop arthritic symptoms. Further research should be done in this area, to examine the specific age cohorts and ethnicities that may be more prone to anxiety disorders as well as arthritis in relation to an already existing food allergy.

**Presentation Index:** A17**Time:** 9:00**Department:** Psychology**Student Presenter(s)**

Trisko, Jenna

Braulick, Justin

Miskanis, Sarah

Rock, Monica

**Project Sponsor(s)**

Goddling, Phillip



**ESL Student's Preference in Writing Center Tutors - Native Tutor VS. Non-Native Tutor**

Many English as a Second Language (ESL) students utilize the Write Place. In order to better help them with writing, it is necessary and important for tutors to understand what this group of students really wants. This poster presentation will focus on one of the ESL students basic needs in the writing center-whether ESL students prefer to work with an ESL tutor or with a native English speaker (NES) tutor. To answer this question, two graduate students, one an ESL tutor, and the other an NES tutor, designed an ethnographic study based on their sessions with a regular ESL tutee in the Write Place during fall semester 2005. In the pre-test, the ESL student showed no preference for an ESL or an NES tutor. However, based on her different language, body language, and eye contact used during sessions with the ESL tutor and the NES tutor in the four tutorials, a conclusion was reached that she preferred NES tutor to ESL tutor. This presentation covers the background, participants, methods, findings and future implications of the study.

**Presentation Index:** A18**Time:** 9:00**Department:** English**Student Presenter(s)**

Wang, Tingting  
Stephenson, Jeffrey

**Project Sponsor(s)**

Mohrbacher, Carol

**Long Term Metabolic and Health Effects of Ending a Low - Carbohydrate, High-Fat, High-Protein Diet in *Mus musculus***

This experiment was designed to study the effects of returning to a normal diet after prolonged period of being on a low carbohydrate, high fat/protein diet (LC). Our experimental group consisted of 21 mice that were put on a LC diet for seven weeks. After seven weeks they were put back on the normal or control diet (high carbohydrate, low fat/protein). The effects of the LC diet were tested in comparison to a control group of 19 mice. Once removed from the diet, 3 mice from each group were euthanized and tested for histological and biochemical effects and differences every 3 or 4 days. The tests consisted of glucose-6-phosphate, glycogen content, protein mass in liver, and abdominal fat mass. The LC and HC groups did not show significant difference in weight gain or loss throughout the duration of the experiment. However, the LC group showed a significant increase (p-value<0.005) in abdominal fat mass. Any considerable change in glucose-6-phosphate and glycogen content were seen in both LC and HC groups. After being off the diet for 13 days the LC group showed a larger gain in protein content than the HC group.

**Presentation Index:** A19**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Nelsen, Eric  
Hanson, Erin

**Project Sponsor(s)**

Mitchell, David  
Wurdak, Elizabeth

**Performance Appraisal in Speech-Language Pathology**

Performance appraisals are conducted for employees in a variety of work settings, including those in professional fields. Even though they are routinely part of most jobs, there is some question about how systematically the process of performance appraisals has been studied. Very little research has been conducted on the performance appraisal process in speech-language pathology. Informally, SLPs report that there may be concerns about evaluators' proficiency as they feel it is important to be evaluated by those with expertise in the field. Furthermore, SLPs report that job descriptions are outdated and performance appraisal forms are inappropriate to their profession. This study was conducted to examine the existing weaknesses in the overall process of performance appraisal. Once weaknesses have been established, improvements can be made to the appraisal process and the profession as a whole. Twenty-four SLPs from both medical and educational employment settings participated in this study to determine the performance appraisal and feedback patterns for speech-language pathologists. The 24 SLPs in the randomized sample were interviewed based on a questionnaire established in a graduate research methods course. As part of the interview session, job description and performance appraisal forms were collected from each participant. Of the 24 participants, approximately half reported that performance appraisals address most of their job responsibilities. Nearly fifty percent of SLPs interviewed feel that supervisor evaluations help them to be better at their jobs. The results of this study show that performance appraisals and feedback patterns currently in use may need revision. This is especially true of educational settings. The data also supports a need for further study in this area, specifically to examine supervisor qualifications. Professionals must be trained and given the appropriate skills to evaluate SLPs effectively and job descriptions must be updated to reflect what SLPs actually do.

**Presentation Index:** A20**Time:** 9:00**Department:** Fine Arts and Humanities**Student Presenter(s)**

Grieme, Laura  
Bevis, Cheryl  
Schwiesow, Jessica  
Warn, Allison  
Mymryk, Karlie  
Carlson, Stacey  
Bistodeau, Jessica  
VanVooren, Kim  
Krause, Laura  
Olson, Paul  
Holtz, Angela  
Johnson, Kari  
Wurdak, Elizabeth

**Project Sponsor(s)**

Margery Whites

**Effects of Saint Cloud State's Alcohol Education Class on Reducing High-Risk Alcohol Behaviors and Choices**

In 1990 SCSU instituted an Alcohol Education Class for students found in violation of campus alcohol policies. This action was in response to a significant increase in student's alcohol usage during the 1980's escalating to a point of student riots. The class has been offered approximately once a week during the term by Health Services. However, the efficacy of the Alcohol Education class has never been assessed to determine if it has any effect on subsequent student drinking behaviors and choices. Approximately 250 students were involved in a pre-test/post-test survey designed to assess the efficacy of the Alcohol Education class. The data indicates a statistically insignificant effect. The study concludes with recommendations from successful alcohol awareness education models on other campuses similar to SCSU.

**Presentation Index:** A21**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Hjelm, Adam

**Project Sponsor(s)**

Hauslein, Patricia

**The Effect of Different Media on *E. coli*'s Light and Cell Density**

Light production by living organisms is an understudied phenomenon. One bioluminescent system is known as the Lux operon from *Vibrio fischeri*, was placed in the common gut bacteria, *Escheria coli* (*E. coli*). In this experiment two strains of *E.coli* were grown on three different types of media; Luria-Bertani (LB), tryptic soy (TSB), and nutrient broth (NB). The *E. coli* bacteria and 3 micro liters of ampicillin was inoculated in 10 mL of LB at 30 degrees Celsius for 24 hours. Five hours prior to data collection 10 micro liters of inoculated *E. coli* was placed in LB, TSB, and NB and placed back into the 30 degrees Celsius shaker bath. Values of light density and cell density were taken via cell density meter and luminometer every 20 minutes until maximum growth of 2.0 was achieved in the cell density meter. A metabolic ingredient of TSB inhibited light production.

**Presentation Index:** A22**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Meyer, Holly

**Project Sponsor(s)**

Kvaal, Christopher

**The Design and Synthesis of a Chiral RAS Farnesyl Protein Transferase Inhibitor**

RAS proteins act as a molecular switch for cell growth. Mutant RAS proteins are found in approximately 30% of all human cancers. Mutant RAS proteins act as a broken switch; they can turn "on" signaling for cell growth but cannot be turned "off." This leads to unregulated cell growth, which in the simplest sense is the definition of cancer. It has been shown that the addition of a fifteen carbon chain to the RAS protein, catalyzed by the enzyme farnesyl protein transferase (FPTase), is the key step in allowing RAS proteins to regulate cell growth. Compounds that inhibit this enzyme and prevent mutant RAS's signaling function are therefore potential chemotherapeutic agents. One method to inhibit FPTase is through the design of farnesyl diphosphate mimetics that competitively inhibit the enzyme. Current work in our laboratory targets a novel, chiral lactam that will serve as both a competitive inhibitor of FPTase as well as a substrate for the RAS protein. This compound is being prepared from commercially available dodecanol and phenylglycinol. By covalently attaching to RAS, it is anticipated that this mimetic will exhibit increased bioactivity as compared to analogues that just serve as competitive FPTase inhibitors.

**Presentation Index:** A23**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Worden, Danielle

**Project Sponsor(s)**

Mechelke, Mark

**Project AURORA**

Wireless communication is becoming more common so that electronic devices do not need to be plugged in to an outlet constantly to communicate on the internet. Security on wireless networks is an ongoing issue. Project AURORA offers a form of wireless communication that can be secured using existing physical barriers, i.e. walls. Project AURORA is a light-based communication system that utilizes light emitting diodes, (LEDs) to communicate at 10 base Ethernet speeds. AURORA thus will allow computers to access the Internet using an existing 10/100 Ethernet infrastructure. AURORA is secure wireless communication since it relies on line-of-sight to connect to the Ethernet. This means that computers that cannot receive the light from the transmitter's source because they are outside of the secure room will not be able to access any private data. AURORA is different from other forms of light-based communication such as communication through infrared because it uses visible light. This means that AURORA will perform two duties: first, it will create a secure port to the internet and second, it will provide high-efficiency room lighting through the use of LEDs. This lighting system will be made to fit into existing light fixtures and will conform to the same power requirements, thus making AURORA compatible with existing lighting systems. As the need for secure networking grows along with the demand for high-efficiency long-term lighting solutions, the market for products like AURORA will also grow. AURORA is the next step towards meeting both of these demands.

**Presentation Index:** A24**Time:** 9:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**

Williams, Benjamin

Meemken, Amanda

Jones, William

**Project Sponsor(s)**

Vogt, Timothy

**Implicit Attitudes Toward Gender and Emotion**

This study involves assessing people's association among gender and emotions. Often women are perceived as more emotional than men. To test this hypothesis, the implicit attitudes test (IAT) paradigm was used. The IAT paradigm involves assigning two levels of classification such as white and black for race with either a compatible concept such as 'good' or incompatible concept, 'bad'. This technique can measure attitudes that people may not even be aware they have. For example if someone is prejudiced against African Americans, then he or she would have a hard time remembering that the concept good has the same response as a black face. However, responses would be faster if the concept bad was matched with a black face. See Fazio and Olson (2003) for a review. In this study, participants saw either an emotional word or a gendered name and classified them. If people associate women with emotions, then it should be easier to classify female names with emotional words than female names with nonemotional words. The converse should be true for the male names.

**Presentation Index:** A25**Time:** 9:00**Department:** Psychology**Student Presenter(s)**

Thomas, Shauna

**Project Sponsor(s)**

Valdes, Leslie

**Calculating the Short-Range Accuracy of MOS Forecasts for 3 Midwest Cities During Meteorological Winter**

Computer forecast model data is used frequently to assist meteorologists in forecasting the weather. The purpose of this research is to determine the accuracy of computer models over an entire season and observe if there are any biases in the models. To do so, 3 elements (max./min. temperature, Probability of Precipitation, and Quantitative Precipitation Forecast) of the Model Output Statistics (MOS) are collected for 3 cities in the Midwest every 12 hours, as new MOS are produced. These 3 cities are St. Cloud, MN, Rockford, IL, and Rochelle, IL. Throughout the season, actual values for the temperature and precipitation are gathered and then compared to what the MOS predicted. The main goal is to look at the calculated errors and see if certain models have specific bias throughout the season. The computer models have some parameters in them to help predict the weather based on historical averages, such as average snow depth during the season. If a city has a significantly different snow depth than average, then the MOS might be incorrectly skewed one way by means of temperature predictions. Such anomalies might become present as the actuals and predictions are compared and calculated. Hopefully, the calculated accuracies of the models will shed some light as to how good the computer models are and if any systematic biases are observed.

**Presentation Index:** A26**Time:** 9:00**Department:** Earth and Atmospheric Sciences**Student Presenter(s)**

Dunkel, Anthony

**Project Sponsor(s)**

Weisman, Robert

**Design and Synthesis of Novel FPTase Inhibitors**

RAS proteins function as a molecular switch for cell growth. Considerable attention has been directed toward the RAS signaling pathway since 30% of all human cancers contain mutant RAS proteins. One method to target RAS oncogenes is the design of farnesyl pyrophosphate mimetics that serve as competitive inhibitors of the enzyme farnesyl protein transferase (FPTase). Farnesyl pyrophosphate is composed of two structural units, a hydrophobic farnesyl "tail" and a polar diphosphate "head". While drug companies have focused primarily on the design of novel "head" mimetics of farnesyl pyrophosphate, our research focuses on modification of the farnesyl "tail". Novel "tails" are currently being prepared that incorporate two aromatic rings. It is anticipated that these farnesyl analogues will bind tighter to the FPTase active site due to intermolecular interactions between the "tail" and the aromatic amino acid residues that have been shown to line the enzyme pocket.

**Presentation Index:** A27**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Gahlon, Hailey

**Project Sponsor(s)**

Mechelke, Mark

**Chemistry of Vanadium-Flavonoid Complexes: Potential Antidiabetic Properties**

Diabetes is a metabolic disease that is characterized by either the inability to produce insulin or the resistance of the cells to insulin. Vanadium has been targeted as a possible biometallic medication for its ability to lower blood glucose levels for both types of diabetes. Flavonoids show strong antioxidant properties and also exhibit antidiabetic properties. To see the synergistic effects of two antidiabetic agents, we synthesized vanadium complex ( $\text{VO}_2(3\text{-fl})$ , 1) with 3-hydroxyflavone (3-fl) ligand. It was accomplished by the reaction of ammonium metavanadate ( $\text{NH}_4\text{VO}_3$ ) and 3-hydroxyflavone (3-fl) in 1.1:1 molar ratio. Elemental analysis and mass spectral studies indicate the stoichiometry as given in above structure. IR spectroscopy of 1 indicates deprotonation of -OH group at C3 and coordination of vanadium with oxygen of C3 and carbonyl oxygen of C4. UV-vis spectra of this complex in organic solvents exhibit a charge transfer transition in visible region. Similarity of the electronic transitions in different solvents indicate that the coordinating solvents do not coordinate with this complex. Time dependent stability studies of this complex in DMSO indicate dissociation into flavonoid ligand (3-fl) and dioxovanadium species. Detailed chemistry of this complex will be presented.

**Presentation Index:** A28**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Bushkofsky, Justin

**Project Sponsor(s)**

Mahroof-Tahir, Mohammad

**Minnesota School Performance: A Look at Schools and Home Life**

Public education has been a source of great debate in the United States for many years, as there are many differing viewpoints in how to improve what many look at as a failing system. When the dust settles, two main arguments come to light. One says that schools are accountable for what their students learn, so school factors that affect learning must be discussed. In opposition, there are those that say factors found in a child's home play a major role in how they are able to learn, enough that the schools cannot be held fully responsible. The introduction of the No Child Left Behind Act has many people questioning how capable the legislation will be as it takes the school side approach. As such, this is a debate that needs to be addressed with empirical research. This paper examines Minnesota public schools and their performance based on factors of home life and factors of the school themselves. Using Minnesota Basic Standard tests as a proxy, there are thirteen variables looked at to find correlation. Ultimately, this paper finds that there is evidence to believe that factors of home life do have an impact on students' performance. Though only a small cross sectional study, there is some evidence found in this study that adds support for those that argue schools should not be held fully accountable for the performance of students.

**Presentation Index:** A29**Time:** 9:00**Department:** Economics**Student Presenter(s)**  
Dehmer, Kevin**Project Sponsor(s)**  
Olson, John**Evaluation of Control Methods on Invasive Plant Species at Two Minnesota Military Training Sites**

The introduction of invasive plant species at two military training sites (Camp Ripley and Arden Hills Army Training Site) has affected the biodiversity. Because of the lack of a comprehensive long-term plan attempts made to eradicate or control these invasive plants were unsuccessful. The beginning stage has been completed with a mapping and a predictable future distribution of most invasive plants within these military training sites (Babski, 2004). The main goal of this study is to produce a long-term integrated management program that will be effective, affordable, and ecologically sustainable to control invasive plants. The components of this plan include mechanical, biological and chemical agents. These components are being used singularly and in combination with one another. In 2004 and 2005, plots (9 × 10 m) were established to estimate percent cover on the invasive plant control effectiveness. The percent coverage is recorded before and after each treatment method tested. Since 2004, chemical and biological agents have been a large part of this project with a strong emphasis towards chemical control due to its quick results. Many invasive plants have infested the training sites, the following target plants are considered the most problematic species that have been chosen for control testing: spotted knapweed (*Centaurea maculosa*), leafy spurge (*Euphorbia esula*), and common tansy (*Tanacetum vulgare*). A photo record from fall 2004 through 2005 shows a reduction in invasive plant infestation after treated chemically. In addition, these chemicals show an increased efficacy based on the observed percent plant coverage reductions. Earlier biological control releases from 2003 and 2004 show no evidence of presence, however, it takes 5 to 7 years for them to establish. Future testing of new plots and the re-treating of plots will provide valuable data to produce a useable and effective long-term integrated management program.

**Presentation Index:** A30**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**  
Eisterhold, Joe**Project Sponsor(s)**  
Arriagada, Jorge

**The Effect of Retinoid Antagonists on *Xenopus laevis* Development.**

During early embryonic development an excess or deficiency in vitamin A derivatives, known as retinoids, can lead to multiple malformations of which craniofacial defects are one. This study employs a high affinity retinoid antagonist, AGN 193109, to suppress retinoid signaling at the RAR receptor during early development. *Xenopus laevis* embryos were treated with the antagonist from stage 8 through stage 36. After treatment they were stained so that muscle and cartilage development could be assessed. Defects in cartilage formation were observed in a dose dependent manner especially in the formation of brachial cartilage.

**Presentation Index:** A31**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Forsman-Earl, Cynthia

**Project Sponsor(s)**

Schuh, Timothy

**Soil Amino Sugar Nitrogen Concentration of Residential Lawns, St. Cloud, MN**

Various soil nitrogen analysis methods have been used to recommend nitrogen fertilizer rates for better yield. However, even after using recommendations from these tests, crop responsiveness to fertilization has varied widely. A method to measure soil amino sugar nitrogen has been developed by researchers at the University of Illinois. This accelerated diffusion method is to be used to analyze amino sugar nitrogen content in the soils from residential lawns in St. Cloud, MN. Although, amino sugar nitrogen content in cornfields has been shown to be a good predictor of yield, its importance in the soils of residential lawns is not well understood. The findings of this research will help determine amino sugar nitrogen content in residential lawns, and to better understand its significance.

**Presentation Index:** A32**Time:** 9:00**Department:** Environmental and Technological Studies**Student Presenter(s)**

Pradhananga, Amit

**Project Sponsor(s)**

Bender, Mitch

**Teaching Pre-writing Skills to a Child with Autism: Tripod Grips and Drawing Lines**

Pre-writing skills were taught to a child with autism using a task analysis and forward chaining in conjunction with modeling. The participant was a 4.5-year-old boy diagnosed with autism who received 25 hours weekly of Intensive Early Intervention. A multiple baseline design across steps of the sequence was used to evaluate the effectiveness of the intervention. Steps consisted of grasping the writing implement using a tripod grip, placing the tip of the writing implement to the writing surface, and drawing a vertical line and horizontal line. Baseline data showed that the child did not perform any of the steps correctly. Following the implementation of the intervention, the client reached mastery criteria on each step. Tripod grip and putting the writing implement to paper were mastered sequentially, each within 15 sessions, whereas drawing a line was mastered within 38 sessions. Although variability in the client's rate of responding was evident, low rates of responses corresponded with attempts to shape the topography of the responses. Future projects would benefit from examining how antecedent such as the length and width of the writing implement affects how the client grasps the implement, and whether it facilitates a tripod grip.

**Presentation Index:** A33**Time:** 9:00**Department:** Community Psychology**Student Presenter(s)**

Kolt, Lysianne

**Project Sponsor(s)**

Schulze, Kim



**Nutritional Assessment in Stearns County Public Schools**

According to the National School Lunch Program, it is important that Stearns County Public Schools meet the objective of the program to safeguard the health and well-being of the nation's children and to encourage the consumption of nutritious agricultural commodities. The objective of the study was to provide data to Stearns County Public Health regarding nutrition in public schools (Grades 7-12) located within the county. Results determined if adequate nutrition was being provided during breakfast, lunch, and ala carte. In addition, the nutritional value of items in the vending machines was analyzed. An ordinal survey was implemented to 15 Stearns County Public Schools grades 7-12 using non-probability sampling. The survey was given to one of the following in each school: nutritionist, head cook, or school nurse. Mean, mode, and range were then calculated for each response given to determine the findings. In addition, percentages were calculated to determine the frequency of responses.

**Presentation Index:** A34**Time:** 9:00**Department:** Nursing Science**Student Presenter(s)**

Herring, Lindsey  
Huynh, An  
Christoffer, Heather  
Edelbrock, Heidi

**Project Sponsor(s)**

Lenz, Brenda  
Schorn-Rhoda, Mary Ann

**Slime Mold and Fuzzy Logic**

The representation, the instantiation, and the utilization of concepts are recurrent topics in the cognitive sciences. Traditional forms of logic are based on the law of the excluded middle, a statement cannot be both true and false. If a contradiction is noted in an argument, the argument is refuted. However, the tenets of propositional calculus are often inconsistent with psychological reality. For example, pattern recognition, category formation, and common sense judgment are more consistent with biologically instantiated forms of reasoning. Yet, often these processes violate the principles of propositional logic, and therefore, alternative forms of logic are needed. In systems of fuzzy logic, predicates can hold multiple truth values, and therefore, the law of excluded middle does not hold. Fuzzy logic, non-monotonic logic, and modal logic incorporate notions of possibility, and class membership is represented along a continuum. Non-monotonic frameworks allow an individual to reach a conclusion and then, change that conclusion as additional information is collected. In this paper, the phylogenetic emergence of these systems is examined. Beginning with the chemical message systems of slime molds and moving to neuron functioning in primates, the biological reality and instantiation of fuzzy logics are described. The non-monotonic formalisms of these systems is the basis for swarm models of intelligence, and the use of such models in neural prostheses is addressed.

**Presentation Index:** A35**Time:** 9:00**Department:** Special Education**Student Presenter(s)**

Neznik, Bradley

**Project Sponsor(s)**

Pickle, Michael

**Emergency Preparedness Planning on the Mille Lacs Lake Reservation: Perceived Importance and Presence of Organizational and Community Emergency Plans**

In 1998, the Federal Emergency Management Agency (FEMA) changed regulations to allow Tribal Governments to control their own emergency preparedness planning. As The Mille Lacs Band of Ojibwe prepared for initiation of the Emergency Operations Plan (EOP) that was developed for their reservation, the community's organizations and businesses were examined to determine how they were prepared for different disasters. A survey was distributed to all organizations in District One of the Mille Lacs Reservation which asked questions about their attitudes towards emergency preparedness and if the organization had a plan in place for themselves or for helping the community in case of a number of different disaster scenarios. It was found that over 90% of the respondents strongly agreed that it is important to have an emergency plan of action in place. With the exception of infectious disease outbreaks, 75% of the organizations had written plans for themselves on how to respond to the other disaster scenarios. However, only 37.5% had written plans of action on how to help the community in any scenario. When broken down into the type of organization, it was found that 50% of health and government service agencies had community plans and none of the private businesses had community plans. This study demonstrated the overall need for the establishment of an EOP to ensure an effective and cohesive response in case of a disaster. Community interest in the development of a plan appears to be high, which with proper education, will increase acceptance of the plan by the organizations. After the EOP is presented to the community, further research is necessary to determine the effectiveness of implementation.

**Presentation Index:** A36**Time:** 9:00**Department:** Nursing Science**Student Presenter(s)**Kiffmeyer, Shannon  
Arickx, Sara**Project Sponsor(s)**Lenz, Brenda  
Schorn-Rhoda, Mary Ann**Comparing C-Start Performance in Two Species of Mullet**

The Hawaiian Islands are home to a prized brackish water sport fish, the native striped mullet, *Mugil cephalus*. In the first half of the 20th century, a second species of mullet, the Marquesian mullet (*Valamugil engeli*) was purposefully introduced into Hawaiian waters. Both species of mullet are observed schooling together and are generally considered to occupy roughly the same ecological niche. In recent years, concern has been growing that the non-native mullet may adversely affect the population health of the native mullet. In this study, we investigated the fishes ability to avoid predation through a highly reflexive "C"-start behavior. During the behavior, the startled fish will bend its body into a "C" shape and then quickly accelerate away from the direction of the stimulus. This behavior is central to predator avoidance and is one of the fastest vertebrate behaviors. Wild caught mullet from both species were filmed with a high-speed video camera (1000 frames/second) as they were startled by a standardized stimulus. Recordings were first transferred to a G4 Macintosh computer running Quick Time Pro 7.0 software (10 recordings for each species). Recordings were cropped to the actual "C"-start behavior (approximately 175 frames = 0.175 sec per "C"-start) and then fed into NIH Image analysis software for the Macintosh. Ten axial landmark points were identified on each frame of each "C"-start sequence using the Quick Image (Jeff Walker, Field Museum Chicago) software plug-in for NIH Image. Data were then transferred into Microsoft Excel to calculate axial velocity and acceleration during the "C"-start behavior.

**Presentation Index:** A37**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Jacobson, Brooke

**Project Sponsor(s)**

Schoenfuss, Heiko

**Novel Latent Fingerprinting Techniques Based on Binding/Complex Formation with 8-Quinolinol Sulfate**

The Trace Metal Detection Technique (TMDT) is commonly used in forensics to determine if a suspect has been in contact with a metal object. The technique uses an 8-Quinolinol Sulfate solution which is sprayed onto the skin and if contact had been made, the 8-Quinolinol Sulfate and the metal residue will bind and fluoresce under UV light. A latent fingerprint is the reproduction of friction ridges by different chemicals that have been excreted naturally by eccrine glands. We have adopted the TMDT to detect and identify latent finger prints by developing a novel method of applying a powdered metal to a latent print. In this method the metal powder adheres to the chemical patterns left upon a surface touched by a suspect/perpetrator of crime. By applying the 8-Quinolinol Sulfate using a developing chamber, it allows for the binding of the metal and the 8-Quinolinol Sulfate; creating a metal-8-Quinolinol complex which glows when exposed to UV light. The metals aluminum, zinc, magnesium, and iron were tested using this method. Zinc and magnesium appear to give the best results. The clarity of prints obtained and the intensity of the fluorescence produced depends on the latent print surface and its ability to maintain a latent print. Additional studies to formalize this method development and its adaptation to crime scene processing are on-going.

**Presentation Index:** A38**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Lentz, Katharine

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Inferring Diet from Dental Microfossils**

Siliceous microfossils were extracted from the dentations of vertebrates from various phyla and stratigraphic intervals. Specimens sampled included grazers and omnivores from terrestrial and wetland environments. Temporal intervals sampled included specimens from 30 mya to 0.10 mya. Microfossils reclaimed from teeth include phytolith and diatom specimens indicative of vegetation consumed by vertebrates. Preliminary analysis indicates this technique may be a viable proxy indicator of past dietary consumption.

**Presentation Index:** A39**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Kummer, Elizabeth

**Project Sponsor(s)**

Julius, Matthew

**Like mother, like daughter? An Analysis of Proteins Expressed Between Parent and Mutant Phenotypes of *Candida albicans* Strains Through SDS-PAGE**

Scientists have known for sixty years that the opportunistic fungal pathogen *Candida albicans* is dimorphic and changes between a single-celled yeast form and a multi-celled filamentous form in response to environmental conditions. Dimorphism is required for pathogenicity and strains locked into either the yeast or filamentous form are avirulent. In 1985 Soll's lab isolated strain WO-1 from a fatal systemic case of candidiasis and later showed that WO-1 undergoes a phenotypic switch, that was named for the color of the colonies, between a white and opaque form. Phenotypic switching has also been shown to be a virulence factor in *C. albicans*. The biology of both dimorphism and phenotypic switching are not well understood at the protein level. Several groups have shown that antigenic differences exist between the yeast and filamentous forms and between the white and opaque forms but in neither case have the antigens been well characterized. Previous students at CSB/SJU have generated a collection of mutants with alterations in: colony morphology, dimorphism, farnesol production and white/opaque phenotype. The purpose of this study is to determine if the mutant's have qualitative and quantitative differences in their protein expression relative to their parents. Qualitative SDS-PAGE analysis with a KODAK Image Station 2000R and UV Epi-Illumination on SYPRO Ruby stained gels of parental colonies (opaque and white) have demonstrated differences in protein expression. Further protein analysis of parental and mutant strains are in process.

**Presentation Index:** A40**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Wilant, Laura

**Project Sponsor(s)**

Jensen, Ellen

**In Vitro Morphogenetic Studies and Mass Propagation of the Ornamental Fern *Cheilanthes farinosa***

*Cheilanthes farinosa* is a highly praised ornamental fern. In this study we sought to understand the morphophogenetic processes of this fern and to develop a method for mass propagation using tissue culture techniques. Spores were germinated in DMM medium; gametophytes produced sporophytes which were transferred to soil. A series of treatments were applied to all stages of fern development, i.e., effects of cold treatment on spores, effects of different media and pH on spore germination, effects of varied concentrations and combination of growth regulators on different stages of the in vitro cultured gametophytes and sporophytes. Results indicate that this fern species can be mass propagated from spores without any external supply of growth regulators. Regenerative bud formation was observed in axenic sporophytes cultured on DMM medium + 1.0 mg/ 1 BAP or Kn. in MS medium, each gametophyte multiplied and transformed into a dark green leaf-ball. Small pieces collected from this gametophytic ball gave rise to sporophytes. This is a simple and easy way to get 5 – 20 sporophytes from the gametophyte. A study of gametophyte development from spore was also conducted with detailed camera Lucida drawing.

**Presentation Index:** A41**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Chowdhury, Zinat

**Project Sponsor(s)**

Turner, Sandra

**Solvent Mediated Polymorphic Transformation**

Recently many pharmaceutical compounds have been shown to exhibit polymorphism, which is defined simply as the ability of a substance to exist as different crystalline conformations within the crystalline lattice. Polymorphism can have drastic effects on the pharmaceutical properties of compound; including thermodynamics, solubility, bioavailability, and processing properties. When new compounds are being formulated it is thermodynamically favorable to form an unstable polymorphic form. In essentially a two-step process the dissolution of solid into the solvent, and the nucleation of the new crystal, we can describe the solvent mediated transformation process. It has been suggested that solubility of the compound plays a major role in the rate of conversion to the most stable polymorph. Therefore a direct comparison of the solubility and the rate of conversion to the most stable polymorphic form have been explored.

**Presentation Index:** A42**Time:** 9:00**Department:** Chemistry**Student Presenter(s)**

Mondloch, Joseph

**Project Sponsor(s)**

Gregory, Daniel

**Diagnostic Phytolith Evidence for the Presence and Abundance of Wild Rice (*Zizania sp.*) in Kathio State Park, Minnesota**

Silicified plant tissues known as phytoliths are powerful tools useful for reconstructing past climate, environment, human diet, and crop cultivation. Recently, researchers have extracted and identified grass and other plant silica phytoliths preserved in Late Cretaceous (93 to 65 Ma) dinosaur coprolites (dried feces), demonstrating the robustness and significance of phytoliths in the geological record. Wild rice, (*Zizania sp.*), a prolific producer of silica phytoliths, has been a crucial food source for past and present inhabitants, both human and wildlife, of the Great Lakes region. Thus, an understanding of the paleodistribution of wild rice is of special interest to archaeologists and biologists today. This study develops a novel approach to understanding the paleodistribution of wild rice through the analysis of plant silica phytoliths in the lake sediment record from central Minnesota. A comparative collection of phytoliths from common aquatic, shoreline and wetland plants have been established using standard dry-ashing technique. These phytoliths have been described and measured using light microscopy and still/video image capture. Modern lake sediments (top 2 cm) from 40 wild rice and non-rice locations within the study area have been collected and are currently being processed for phytoliths. Lake cores, 85 cm in length and spanning well over 1000 years in age, have been extracted from three locations, with additional cores planned. Preliminary observations indicate clear distinctions between wild rice phytolith morphology and comparative collection species morphologies. Methodology for phytolith extraction from lake sediments, while still being developed for maximum phytolith recovery and efficiency, has been successful in recovering wild rice phytoliths from the lake sediment record.

**Presentation Index:** A43**Time:** 9:00**Department:** Biological Sciences & Geography**Student Presenter(s)**

Yost, Chad

**Project Sponsor(s)**

Julius, Matthew

Blinnikov, Mikhail

**Undergraduate Research on Sexual Assault at a Private College**

Sexual assault is one of the most underreported crimes in the nation. Though a complete understanding of sexual assault reporting rates continues to elude researchers, it is highly documented that alcohol intoxication is powerfully correlated with reporting rates. The present research examines the role that alcohol intoxication plays in the context of sexual assault reporting at a private, Catholic institution in the Midwest. Using a battery of three studies including anonymous interviews ( $N = 156$ ), and two factorial designed experiments ( $2 \times 4$ ,  $N = 168$ ;  $2 \times 3$ ,  $N = 257$ ), three questions were addressed in this research: (1) To what extent do survivors of sexual assault report incidents to formal authorities? (2) To what extent are survivors and perpetrators under the influence of alcohol during sexual assault? And, most importantly, (3) To what extent does perceived alcohol ingestion have on attributions surrounding assault for members of female sexual assault survivors' social networks? Sexual assault prevalence rates varied as a function of the nature of the assault experienced, with 12% of the sample ( $n = 19$ ) having experienced "rape." Of those participants reporting an experience of "rape" during the past five years, 0% reported the incident(s) to formal authorities. Sixty-seven percent of the perpetrators and over half of the sexual assault survivors were intoxicated at the time of the assault. Results suggest that attributions of blame for sexual assault are influenced by peer-sex and peer-knowledge of contextual factors surrounding specific sexual assaults. When sexual assault survivors are intoxicated or conspicuously flirtatious, internal attributions, which place blame on the sexually assaulted person, are significantly more common. The results are discussed in terms of the potential influence that peer attributions may have in silencing the reporting of sexual assault among college women at both private and public institutions.

**Presentation Index:** A44**Time:** 9:00**Department:** Communication Studies**Student Presenter(s)**Balk, Rachel  
Brom, Alison**Project Sponsor(s)**

Turk, Don

**Portable Gaming Device**

The technological age has certainly brought about an ability for people to effortlessly keep in touch, even in entertaining ways such as remote gaming. However, many people, particularly among the elderly population, either do not own, use, or desire to use the personal computer technology widely used for these purposes. The Portable Gaming Device solves the issue of bringing remote gaming to these people by using a portable unit that contains a color LCD and a button interface. This will allow users to play simple games such as tic-tac-toe and checkers. The second player, such as grandchildren, will use a computer to play against distant relatives, such as grandparents, who are using the Portable Gaming Device.

**Presentation Index:** A45**Time:** 9:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**Witthus, Joel  
Barthel, David**Project Sponsor(s)**

Glazos, Michael

**Can Stable Isotope Chemistry Distinguish Between Antarctic Krill in the Southern Ocean?**

Antarctic krill (*Euphausia superba*) are a keystone species and the target of an important commercial fishery in the Southern Ocean. Dense swarms of Antarctic krill are located off South Georgia in the South Atlantic but are non-breeding, so where do these krill originate? They may recruit from the South Shetland Islands, transported via the Antarctic Circumpolar Current; or the Weddell Sea, transported via the Weddell Gyre; or from both. If krill record environmental exposure in the crystalline cones of their eyes as fish do in their otoliths, then cone chemistry may provide information about where these krill originate. To test if cone chemistry can detect differential environmental exposure, we sampled krill from two different areas, the South Area (located off the Antarctic Peninsula) and the West Area (located off the South Shetland Islands). After developing a method for manipulation of the cones, we conducted stable isotope chemistry assays on cones collected from individual krill. Levels of  $\delta^{15}\text{N}$  were below detection limits, and the two areas showed no significant differences in  $\delta^{13}\text{C}$ . Several reasons may account for the  $\delta^{13}\text{C}$  results, and further work is required to test whether cone chemistry may provide a natural tag to trace krill provenance.

**Presentation Index:** A46**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Kraetsch, Cassie

**Project Sponsor(s)**

Julius, Matthew

Ashford, Julian

**Railroad Snow Melting Monitoring System**

The railroad uses three wires to control multiple snow melting units, and if one of them has a fault a worker has to go out and check all the snow melting units, until the problem is found. Most of the time the only thing the worker had to do is reset the snow melting units, to get them to work again. If there was something wrong with the snow melting units the worker typically will not have the part to fix it. Then the worker has to go get the part and then go back and fix the snow melting units. This can cause a long delay where the track can not be used, and costs a lot of money. Our goal is to create an interface that could control up to ten snow melting units using a transceiver with a range of about 300 feet. We are building a master controller, and two slaves for it to control. It will monitor the snow detect sensor, temperature sensor, and other sensors to see if it should run. If the snow detect sensor detects snow then we will send a message to the master controller unit to turn on the gas hot air blowers where the track switches. The master controller has a DSPIC30F6014 microcontroller which will be taking all of the sensor readings and processing the data from the other snow melting controls on the track. There will be a PC located at the master controller, which will be connected through USB to our microcontroller which will be programmed to operate all of the functions previously described. The PC will be able to be remotely accessed from any other PC via the internet.

**Presentation Index:** A47**Time:** 9:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**

Honeck, Jason

Dircks, April

**Project Sponsor(s)**

Heneghan, Michael

**Performance of Routing Versus Switching on a State of the Art Switch**

Given the recent increased dependence on data networks for Internet and other business needs, there is an increased need to address the functionality and security of the devices which allow the transmission of data. To that end, this paper examines the relative efficiencies of both switches and routers utilizing data obtained in a controlled laboratory experiment. A Force 10 E-300 configurable switch was used to gather data with eight configurations ranging from a 1 by 3 to a 2 by 6. The data collected appears to suggest that while there is a difference between the packet inter-arrival time and the mean packet intensity in comparing results for the separate router and switch configurations there is no difference between the mean throughput between the router and switch.

**Presentation Index:** B1**Time:** 9:00**Department:** Business Computer Information Systems**Student Presenter(s)**

Nordby, Mark

**Project Sponsor(s)**

Schmidt, Mark

**A Mathematical Framework for Equivalent Real Formulations**

Many real world problems result in complex-valued systems of linear equations. At the same time, a large portion of equation solver software is written to solve only real-valued systems. By casting a complex linear system into an equivalent real formulation (ERF), one can solve the system using a real solver. The canonical K form of a complex matrix is formed by creating a real matrix with twice the dimensions of the complex matrix and including each value of the complex matrix twice, in specific locations. Each of the four ERFs discussed by Day and Heroux in their paper can be expressed by multiplying the canonical K form of the complex matrix by certain diagonal and permutation matrices on either side. This will allow, for instance, one ERF to be used as a preconditioner and another ERF to be used to iteratively solve the linear system by simply switching back and forth between the forms through scaling and permuting. Such transformations between ERF forms are attractive for simultaneously exploiting spectral and symmetry properties in different phases of a solver. Three diagonal matrices and two permutation matrices (together with their transposes) exist for the ERFs we are considering. The talk will describe the specific diagonal and permutation matrices needed as well as how to transform from one ERF to another.

**Presentation Index:** B2**Time:** 9:20**Department:** Computer Science**Student Presenter(s)**

Knepper, Sarah

**Project Sponsor(s)**

Heroux, Michael



**Easy DB**

Easy DB programming project is designed to allow users with no experience with, or knowledge of database systems or the query language used to access them. Easy DB runs on Unix/Linux with Apache Web Server installed, uses the MySQL database engine and is written in PHP (LAMP). This configuration allows a completely free implementation of the system as all of the components needed to run the system are free. The goal of Easy DB project is to offer a web based (platform independent) interface to the database system, stripping away all of the most complex elements of MySQL administration. The users of Easy DB are given the opportunity to create databases and tables to store information in (class schedule, grades achieved, DVD collection, list of formulas, business contacts, etc.), add records to the tables, remove records from the tables, update records in the tables and most importantly, view and search through the databases for specific records. All of these can be done anywhere the user has access to the Internet, as the database is remotely accessed by the Easy DB interface. Ideally, the system would work well for teachers, students or business professionals, but is made to be simple enough that any one can use it. There are other systems available that allow users remote access to database systems, however they are created for specific uses, are not very simple to use, and are cost prohibitive for individual users. Looking to the future, online storage of data is becoming a major part of the internet landscape and allowing users to access their information anywhere is going to be an important part of this landscape. With Easy DB this is made simple, cheap, and convenient.

**Presentation Index:** B3**Time:** 9:40**Department:** Statistics and Computer Networking**Student Presenter(s)**

Harris, Daniel

**Project Sponsor(s)**

Li, Lin

**Computer Controlled Fiber - Optic Gyroscope**

The goal of the fiber-optic gyroscope (FOG) is to make ultra-sensitive measurements of rotational motion. The FOG functions off the basic characteristic of light, in which a light beam travels as a wave that may constructively or destructively interfere with other beams of light. The process of designing a FOG breaks down into three main parts: light source, fiber-optic technology, and signal processing. Firstly, based on several desirable properties, a superluminescent diode is selected as the light source. Secondly, this light is split into two beams and travels via 1500 meters of fiber-optic cable that is wrapped cylindrically. One light beam travels clockwise while the other light beam travels counter-clockwise. The light beams are brought in contact after traveling 1500 meters, and at this point, they interfere constructively or destructively, based on motion. In the case of a stationary apparatus, the light beams constructively interfere, resulting in max power output. However, when the apparatus is rotated clockwise, for example, then the clockwise beam travels a longer distance than the counterclockwise beam. The beams are not in-phase upon rejoining and results in destructive interference. Therefore, the third and final task of designing a FOG is signal processing. The power output of the signal received is proportional to the rotation rate, and through circuit manipulating, the signal can be used to detect the degree of motion. My presentation includes design, experiments, and practicable applications of a FOG built last semester.

**Presentation Index:** B4**Time:** 10:00**Department:** Physics, Astronomy and Engineering Science**Student Presenter(s)**

Peichel, Steve

**Project Sponsor(s)**

Langley, Dean

**Biomechanics of Red and White Muscle Distribution in Two Species of Climbing Hawaiian Gobies**

Two species of Hawaiian amphidromous gobies are remarkable in their ability to climb waterfalls several hundred meters tall. Juveniles of *Lentipes concolor* climb by rapid bursts of axial undulation (25 ms duration) with long rest periods during which the animal is attached to the waterfall with its pelvic sucking disk. Juveniles of *Sicyopterus stimpsoni* alternately attach pelvic sucking disk and their sucking mouth to the waterfall and climb in prolonged bouts with interspersed short rest periods. Based on the differing juvenile climbing styles and physiological constraints in high speed undulations in adult fish, we hypothesized that propulsive musculature in juvenile *L. concolor* would be dominated by fast, white muscle fibers while the corresponding musculature in *S. stimpsoni* would include more slow, red muscle fibers. Furthermore, we predicted a shift from white to red fibers with growth in *L. concolor*. Specimens for this study were collected in Hakalau Stream, Island of Hawai'i, sectioned, and frozen at  $-80^{\circ}\text{C}$  in isopentane. Serial sections (12  $\mu\text{m}$ ) were made and ATPase activity in transverse sections of muscle were evaluated by histochemical staining. As predicted, juvenile *L. concolor* tail musculature was dominated by white muscle fibers (63% white muscle) while in juvenile *S. stimpsoni* red muscle fibers dominated propulsive musculature (100% red muscle). The head region which is not used as a primary locomotor structure was composed primarily of red muscle fibers in *L. concolor* (63% red muscle) and *S. stimpsoni* (68% red muscle). Adults of both species exhibited peripheral bands of red musculature and a core of white fibers in the tail section. These results suggest that differences in muscle fiber type distribution may contribute to differences in locomotor performance between these species.

**Presentation Index:** B5**Time:** 10:20**Department:** Biological Sciences**Student Presenter(s)**

Cediel, Roberto

**Project Sponsor(s)**

Schoenfuss, Heiko

**La Evolución Social y Femenina en La Plaza del Diamante (Social and Feminine Evolution in the Plaza del Diamante)**

This work is an analysis of the life-stages of Natalia, the main character of Merce Rodoreda's *La Plaza del Diamante*. It examines the personal, class, and gender struggles faced by Natalia, a lower-class woman caught in the midst of Spain's Civil War, as she evolves from a naïve and relatively submissive newlywed to a single mother and war widow to a shopkeeper's wife, finally free of domestic burdens and able to discover her own identity. It explores ways in which Natalia's identity struggle and growth parallel the struggles of Spanish society, a people deeply divided by the ideologies and social tragedies of the war. Finally, the essay looks at the influence of Romanticism, Naturalism, Existentialism, and the Generation of '98 on the writing of Merce Rodoreda, an exile, woman, and writer of the Post-War Generation.

**Presentation Index:** C1**Time:** 9:00**Department:** Foreign Languages and Literature**Student Presenter(s)**

Forseth, Mallory

**Project Sponsor(s)**

Splittgerber, Lisa

**Bartolome de Las Casas; Apostol de los Indígenas (Bartolome de Las Casas: Apostle of the Natives)**

Bartolomé de Las Casas was a Spanish colonist, a priest, a scholar, and historian during the 16th century who focused on human rights abuses against the native people in the New World after the Spanish began to colonize it. After coming to the realization that the Spanish treatment of the native population was unconscionable, Las Casas became a Dominican priest and began to work toward repealing laws that allowed the native people to be exploited and abused by the Spanish through systems such as the *encomiendas* and *haciendas*. For almost sixty years Las Casas confronted kings, *encomenderos* and many other people in his fight for better treatment and equality for the native populations of the New World. During this time Las Casas wrote many texts including books, letters and treaties in which he tried to expose the reality and the cruelties that the Spanish had been using against the indigenous people. These texts caught the attention of many people and have attributed to the creation of the black legend in which the Spanish are remembered as cruel, bloodthirsty and avaricious during the process of colonizing the New World. The purpose of this project was to examine how the text entitled *La Brevísima Relación de la destrucción de las Indias* (*The Brief Account of the destruction of the Indies*) contributed to Las Casas fight against the mistreatment of the indigenous people and how it helped him contribute to the creation of the black legend and the New Laws of 1542 that called for the abolition of the *encomienda* system. As a result of his passionate fight against the destruction of the indigenous people in the New World many people refer to Las Casas with the title of *Apóstol de los indígenas* (*Apostle of the indigenous*).

**Presentation Index:** C2**Time:** 9:20**Department:** Foreign Languages and Literature**Student Presenter(s)**

Egan, Lindsey

**Project Sponsor(s)**

Splittgerber, Lisa

**Investigación sobre la novela El sur de Adelaida García Morales, de la Generación Testimonial de España (Investigation of the Novel El Sur by Adelaida García Morales, of the Spanish Post-War Generation)**

One of the most interesting and moving novels of the Postwar Generation is the novel El sur, written by Adelaida García Morales, one of Spain's most distinguished writers. The novel comes out of a period of social chaos in Spain, during the Civil War. The novels from this period are testimonials of what happened in Spain, not only in its politics, but also in the daily life of families and society as a whole. The novel El sur is a magnificent example from this period, given that it deals with the journey towards the adult life and womanhood for the protagonist Adriana, who is disturbed by the unexplained death of her father, which frees her hidden voice and allows her to write a letter to her father. The novel is this very letter, in which Adriana relates the significant events of her life and of her relationship with her father. These events are full of hidden symbols, all related to the tragedies associated with the Spanish Civil War. This work examines the life of the author in order to find a broader base upon which to analyze and understand the novel. For the same reason, it briefly examines the social and political situation of the Postwar period. Using these explorations as a starting point, the paper shifts to its focus to the decoding of this work. The novel is analyzed as a text of the Postwar Generation, as a lyric novel and its themes and symbolism are explored.

**Presentation Index:** C3**Time:** 9:40**Department:** Foreign Languages and Literature**Student Presenter(s)**

Nelson, Quinn

**Project Sponsor(s)**

Splittgerber, Lisa

**Salvador Dali: A True Surrealist**

"One Second Before Awakening from a Dream Caused by the Flight of a Bee Around a Pomegranate" is a fantastically surreal painting by the world-renowned Spanish artist Salvador Dali. Under close speculation, the depths contained in this painting illuminate and allow viewers to further their understanding in terms of the works created during, and the purpose of, the Surrealist Movement through the eyes of Dali. In the presentation of this piece of art, these depths will be brought to light and discussed in terms of personal opinion and its relation to the symbolism and imagery of Dali's intent. Anyone passionate about art, surrealism, or broadening their horizons has the opportunity to pick apart and appreciate this moving work by one of the greatest masters of art of the twentieth century: Salvador Dali.

**Presentation Index:** C4**Time:** 10:00**Department:** Foreign Languages and Literature**Student Presenter(s)**

Peinovich, Brooke

**Project Sponsor(s)**

Triana-Echeverria, Luz

**FSAE Race Car**

The objective of the Formula SAE competition is for the Society of Automotive Engineers (SAE) student members to conceive, design, fabricate and compete with small formula-style racing cars. The cars are built with a team effort over a period of approximately one year and are taken to the annual competition for judging and comparison with 139 other vehicles from colleges and universities throughout the country. The racecars are small cars, however an extensive amount of design, analysis, and fabrication are required in order to be competitive in this event. The main design components addressed for this year's competition include frame analysis and reinforcement, intake design and fabrication, crush zone design and fabrication, front hub design and fabrication, steering analysis and reinforcement, and suspension analysis and tuning. The components that are the focus of this presentation are the suspension analysis and tuning, steering analysis and reinforcement, and crush zone analysis and fabrication. Also included will be the data acquired for analyses, methods of acquiring the data, analysis methods, tuning methods, and the resultant behaviors of specific tuning adjustments.

**Presentation Index:** D1**Time:** 9:00**Department:** Mechanical and Manufacturing Engineering**Student Presenter(s)**

Shatek, Nick  
Johnston, Justin  
Dawson, Charlie

**Project Sponsor(s)**

Miller, Kenneth

**Air Cargo Security**

This research challenges the Department of Transportation, the Federal Aviation Agency and Transportation Security Agency to utilize contemporary and futurist measures to secure and care for the nation's air cargo assets from current and forecasted threats. From the first air mail services in the United States, to the Berlin Airlift, and even in today's modern era, air cargo has served a vital role in the distribution of goods and products worldwide. Air cargo is one of many key components of the air transportation system in this country and throughout the world. Following the September 11, 2001, terrorist attacks on the United States, drastic changes have been made to the air transportation system throughout the world. These changes have primarily focused on safety and protection of passenger carrying aircraft. However, a more neglected aspect of the air transportation industry has been air cargo security. Even with the onset of new and improved security measures taken by the U.S. government and airlines worldwide, little has been accomplished in securing and protecting air cargo and freight.

**Presentation Index:** D2**Time:** 9:20**Department:** Aviation**Student Presenter(s)**

Webber, Grant

**Project Sponsor(s)**

Aceves, Robert

**National ID**

On September 7th, 2004, Real ID legislation sponsored by Senators McCain and Lieberman was introduced on the Senate floor in response to the 9/11 Commissions report (McCullagh, 2004). In May of 2005, Public Law 109-13 was passed by the 109th Congress. Hidden within this bill was the Real ID Act of 2005 under Division B (McCullagh, 2004). In addition to the 3 year timeline for implementation and federal certifications, a State will be required to include a persons full legal name, date of birth, gender, digital photograph, address or principle residence and the drivers license or identification number (McCullagh, 2005). The license must use machine readable technology with defined minimum data elements and will also require physical security features designed to prevent tampering, counterfeiting and duplication of the document. Barry Steinhardt of the ACLU stated that higher taxes and fees along with longer lines and repeat visits to the Department of Motor Vehicles will inhibit many for obtaining a license (ACLU, 2006). Without the Real ID drivers license, citizens will not have access to federal buildings and facilities as well as air travel.

**Presentation Index:** D3**Time:** 9:40**Department:** Aviation**Student Presenter(s)**

Du Lac, Shawn

**Project Sponsor(s)**

Aceves, Robert

**Airboat Brake System**

The Minneapolis Fire Department owns an airboat which is used for water rescues performed during winter months when ice is present on lakes and rivers. The airboat, which is a flat-bottom boat propelled by a large fan, is ideal for winter rescues because it allows the rescuers to move across both ice and open water. Although the airboat has been effective in these situations in the past, there have been some safety concerns associated with the use of the boat on ice. When used in open water, the boat is relatively easy to control, and stopping distances are reasonably short due to drag created by the water. However, when the boat is used on ice, control becomes far more difficult, and stopping distances are greatly increased. The intent of this design project was to find a cost effective means to improve control and reduce stopping distances of the airboat when used on ice. It was decided that the best way to improve the boat's performance on ice was to design a braking system that could be engaged and disengaged as needed. A hinged plate with ice picks mounted at the rear of the boat was designed to create a cutting force against the ice. This cutting force would create a braking force on the boat. Various tasks were involved in the successful completion of this project. These tasks included research and testing on the cutting forces of ice, strength and force analysis on the brake components, hydraulics and control selection and implementation, and cost analysis for the project.

**Presentation Index:** D4**Time:** 10:00**Department:** Mechanical and Manufacturing Engineering**Student Presenter(s)**

Lundorff, Kevin

Lesniak, William

Olson, Matt

**Project Sponsor(s)**

Bekkala, Andrew

Byun, Jeongmin

**Advertising Enthymemes**

This presentation gives an analysis of the role that audiences play in making print-advertisements persuasive. Specifically, audiences participate in their own persuasion by inserting ideas they find acceptable when providing the missing premise in the advertisement's central claim. This is made possible through an enthymeme, a rhetorical trope introduced by Aristotle. As well as discussing the relationship between ancient rhetoric and current advertising, a definition will be offered to distinguish advertising enthymemes from the broader category of enthymemes. The analysis and definition is valuable to both advertisers and the audiences that they target because it raises awareness of the means in which enthymemes are used and could be further used to sway opinions. It will also be valuable to rhetoricians because it adds to the current discussion and definition of enthymemes. Though the established definition may be applicable to other forms of advertising, the study only focuses upon print advertisements that incorporate images.

**Presentation Index:** E1**Time:** 9:00**Department:** English**Student Presenter(s)**  
Peterson, Debbie**Project Sponsor(s)**  
Heiman, James**Multicultural Student Service (MSS) at St. Cloud State University**

This exploratory paper examines the comprehensive services offered by the Multicultural Student Services (MSS) to students at St. Cloud State University (SCSU). By giving academic assistance, encouraging personal development and offering multicultural programming, MSS enhances students' success at SCSU. Surprisingly, over 32% of the SCSU students are not aware of these benefits and more than 70% of the students don't even use the services. This research paper investigates students' awareness about the existence of MSS and the services it offers. Also in this paper, the strength, weakness, opportunity and threat for MSS has been discussed. Several study methods were considered while examining students' perceptions and their use of MSS resources. Examples of the research methods used includes in-depth interviews, media reviews, direct observation and surveys. If the students are well informed about the MSS, their perceptions toward using services available at MSS will definitely increase. But just take a look to compare the results obtained from secondary research and primary research in this study to test your own idea. Do you think a significant of the students uses the existing services at MSS such as tutoring for individuals and small groups, academic advising, counseling, internships and scholarships for students? Very amazing and suggestive responses from students who participated are also quoted through out the paper.

**Presentation Index:** E2**Time:** 9:20**Department:** Mass Communications**Student Presenter(s)**  
Juma, Peter**Project Sponsor(s)**  
Ahmad, Shahzad  
Przytula, Tomasz

**"What's Your Type" American Red Cross Blood Drive**

What's your type? This became the tagline for our public relations campaign, which was conducted for a Public Relations class at St. Cloud State University. The assignment asked us to work for a group or organization near or at St. Cloud State University. Our PR campaign project addressed the concerns and ways in which to reinforce the American Red Cross blood drive on the St. Cloud State University campus. As students of SCSU and former blood donors, we became curious as to why students chose to either give or not give blood to the American Red Cross when their blood mobile is on campus. We felt the American Red Cross Organization would be a great organization to study, observe and create a PR campaign for, because it is well known and the local chapter is here in St. Cloud. In 1917 the Stearns County Chapter of the American Red Cross was organized and later in 1955 it was renamed the Central Minnesota Chapter due to expansion into other counties. We feel that this organization is well established, but it is not being taken advantage of on the St. Cloud State University campus. We intend to find out why, as well as how we can improve morale and donations or to ultimately save more lives.

**Presentation Index:** E3**Time:** 9:40**Department:** Mass Communications**Student Presenter(s)**Chesborough, Sarah  
Wren, Miranda**Project Sponsor(s)**

Przytula, Tomasz



**An Interlinguistic Study of Bambara and Dyula**

Manding is a West African language spoken by members of the Malinké ethnic group primarily inhabiting the countries of Mali, Guinea, and Côte d'Ivoire. Bambara is a dialect of Manding spoken by the Malinké of Mali and Dyula is the dialect of Manding spoken by Malinké living in northern Côte d'Ivoire. The purpose of this paper was to phonetically and phonologically compare and analyze the linguistic differences between these two Manding dialects and to recognize specific areas of concern in the acquisition of English by speakers of Bambara and Dyula. Sociolinguistic and historical information on each dialect were also discussed. The information presented here is helpful for understanding instances when the phonetic and phonological features of Manding are most likely to create negative interference for the speakers of this language as they try to communicate in English.

**Presentation Index:** F1**Time:** 9:00**Department:** English**Student Presenter(s)**

Amundson Cissé, Adelle

**Project Sponsor(s)**

Koffi, Ettien

**A Contrastive Study of Arabic and English Rhetoric**

This thesis is done within the framework of contrastive rhetoric research. The goal of contrastive rhetoric is to study the rhetoric of other languages and examine their similarities and differences with English. The eventual purpose is to help English as a second or foreign language teachers understand what might influence ESL or EFL students when they write in English in order to improve their writing skill. My thesis studies the rhetorical pattern of Arabic. What makes this thesis different from previous research is that most of the work that was done studied Arabic rhetoric as it is described by non-Arab researchers. Important though it is, such research has overlooked the wealth of studies done by Arab rhetoricians. As a result, some of this research transgressed their initially educational boundaries and jumped into monolithic generalizations that went as far as claiming to provide insights about the "Arab mind". My research has added more authenticity, more depth, and more realism to the literature about Arabic rhetoric in English first by studying the literature written by early and modern Arab rhetoricians, and second, by conducting a thorough analysis of samples of English essays written by Arab students from Morocco and examining the influence of Arabic rhetorical structure, or lack of, on these essays. The goal of this thesis is to contribute to the already rich literature about contrastive rhetoric between Arabic and English. However, it also aims at affirming Arabic as an equally logical language that values clarity, logic, and coherence.

**Presentation Index:** F2**Time:** 9:20**Department:** English**Student Presenter(s)**

Elmeski, Mohammed

**Project Sponsor(s)**

Robinson, James H

**German Final Project**

The reunification of Germany in 1990 illustrated the vast differences between East and West. The unemployment rate since the reunification will be used as an indication of the social changes that occurred. Demographics, the political environment and other such factors will be analyzed to understand the effects on employment.

**Presentation Index:** F3**Time:** 10:00**Department:** Foreign Languages and Literature**Student Presenter(s)**

Ryan, Michael

**Project Sponsor(s)**

Mueller, Isolde

**Through the Eyes of Institutions: Development as a Paradigm**

Third World countries have not always existed. It was towards the end of the Second World War, and with the emergence of superpowers, that we began to see this ranking of nations take place. An ideology began to take shape as a way of defining this ranking phenomenon. Ideologies began to take the form of a new paradigm needed to guide the relationships between ranked nations, specifically with the Third and First World. This paradigm is development, and it is filtered through institutions and ideas such as paternalism and communism, prominent throughout the Cold War Era. Today these institutions take the form of the International Monetary Fund, the World Bank, democracy, and neoliberalism. This paradigm can be traced throughout history into today's most recent situations in Iraq. In my paper I plan to map out the path of development through history, and the impact it has had on Third World nations. As First World nations use canter to explain and introduce modes of "moral" technology and economic prescriptions, solving problems in other countries has become an ethical question. With worries of terrorism and international threat dominating our global agenda, it is time for us to decide whose interests we are really pursuing with our campaigns of democracy and liberation, or soon we will come full circle to face our own paradigm.

**Presentation Index:** F4**Time:** 10:20**Department:** Political Science**Student Presenter(s)**

Kirsch, Jamie

**Project Sponsor(s)**

Greaves, Ed

**Education as Environmental Stewardship: Developing Inquiry-based Learning Modules for High School Science Teachers**

The impact of human activities on our ecosystems is one of the most complex and difficult scientific topics to relate to students of all ages. Yet, few issues are as important and critical to human existence as the alterations humans cause to the environment through the introduction of chemicals and toxins as by-products of industrial manufacturing, household chemicals and pharmaceuticals. Based on ongoing research being conducted in St. Cloud State toxicological laboratories, a series of classroom modules that represent a structured aquatic food chain were developed for use in the high school classroom. In this study we develop tools to help high school teachers relate this central theme in environmental education to their students while maintaining the complexity of the system to be discussed. The modules include diatoms, daphnia and fathead minnows to make up an abbreviated aquatic food chain, allowing us to reveal the pathways by which biologically active chemicals are move within the ecosystem and how they might be affecting the aquatic environment as a whole. Pilot studies are being performed to determine the effectiveness of the modules in the classroom. This project will provide high school science teachers with an expanded tool to the increase scientific literacy of their students, specifically to understand the interrelatedness of the ecosystem and the need for its protection.

**Presentation Index:** G1**Time:** 9:00**Department:** Biological Sciences**Student Presenter(s)**

Koch, Jason

**Project Sponsor(s)**

Schoenfuss, Heiko

**Intra and Interspecific Evolutionary Patterns for Three Endemic Diatom Species from Lake Baikal**

A 100 meter core was obtained from the northern basin of Lake Baikal (Siberia). The top 57 meters of that core was analyzed to determine morphological evolutionary patterns for three diatom sister species. Patterns were derived from three independent morphological characters for each species to determine evolutionary patterns within each individual species. The species-complex was then collapsed and treated as a single evolving lineage to determine evolutionary patterns associated with species formation. All resultant microevolutionary series were analyzed using a computational approach designed to determine directionality in fossilized time series analysis. Results indicate that the species complex was significantly directional, while the evolutionary patterns for each individual species are highly constrained. Further analysis was then conducted to determine potential causes for the inferred patterns. The timing and directionality of microevolutionary events were assessed in context of glacial activity, biotic interaction, and niche acquisition. These potential evolutionary factors were treated as non-mutually exclusive competing hypotheses; thus, negative and synergistic interactions can occur between these factors. As a result, semantic (as opposed to quantitative) models were created to suggest the likely influence of each factor in driving morphological change and determining the timing of speciation.

**Presentation Index:** G2**Time:** 9:20**Department:** Biological Sciences**Student Presenter(s)**

Curtin, Michael

**Project Sponsor(s)**

Julius, Matthew

**Synthesis and Characterization of Vanadium - 3 - hydroxyflavone Coordinated Compounds; Role as Potential Diabetic Agents**

Although insulin continues to be a valuable treatment for diabetics, research in the past thirty years has been striving to find a compound to assist insulin in the battle for diabetes. Since the 1970's when sodium orthovanadate was experimentally determined to act as an inhibitor of Na<sup>+</sup>, K<sup>+</sup>-ATPase, vanadium compounds have been extensively studied for their anti-diabetic properties. In this present research, two vanadium-flavonoid complexes have been synthesized using vanadium sulfate and 3-hydroxyflavone (VOSO<sub>4</sub>·3fl), in 1:2 and 1:1 mol ratios. Both complexes were characterized using elemental analysis, IR, <sup>1</sup>H-NMR, <sup>51</sup>V-NMR, UV-vis. spectroscopy, mass spectrometry and magnetic susceptibility. These studies indicate coordination of vanadium(IV) with 3fl in bidentate fashion. In combination with the results from the spectroscopic methods and elemental analysis, the structures of the two compounds were determined which will be reported. Solution studies using UV-vis spectroscopies indicate interesting behavior in which these complexes are changed to different species. Solid and solution speciation studies will be elaborated. Future research will strive to test the anti-diabetic properties of these compounds.

**Presentation Index:** G3**Time:** 9:40**Department:** Chemistry**Student Presenter(s)**

Swingley, Lucas

**Project Sponsor(s)**

Mahroof-Tahir, Mohammad

**Photochemistry of Aromatic Isothiocyanates: An Economical Synthesis of Phenyl Isocyanide**

Isothiocyanates are compounds characterized by the R-NCS bond, where R is any alkyl or aryl group. The photochemistry of aromatic isothiocyanates has not been fully developed. Previous work has shown, for short-chained isothiocyanates, a desulfurization (homolysis of the C-S bond) to form an isocyanide and triplet sulfur atom was the main mode of deactivation of the excited state. Other studies have shown that for longer chains, such as benzyl isothiocyanate, that isomerization of the isothiocyanate to the thiocyanate form was the dominant reaction. It was suspected that the formation of this product was due in part to a triplet sulfur atom intermediate state produced during photolysis. This work deals with both the photochemistry of both phenyl and phenethyl isothiocyanate as well as the formation of phenyl isocyanide product. This is significant because isocyanide reagents are either expensive or not commercially available. The importance of the desulfurization reaction of aromatic phenyl and phenethyl will be presented in the form of quantum yield calculations. The effects of triplet sulfur quenchers will also be discussed for both the isonitrile formation and the quantum yield calculations. Preliminary results on phenyl and phenethyl isothiocyanate show that isomerization does not occur. This is shown by the lack of products seen in GC-MS spectra of both before and after photolysis of the isothiocyanates.

**Presentation Index:** G4**Time:** 10:00**Department:** Chemistry**Student Presenter(s)**

Roering, Andrew

**Project Sponsor(s)**

Gregory, Daniel

**Detecting Protein-Protein Interactions with the Yeast Two - Hybrid System**

*Toxoplasma gondii* is an obligate intracellular protozoan parasite. Toxoplasmosis may result in severe brain and eye birth defects and encephalitis in the immune-compromised. During its life cycle *Toxoplasma* is able to switch between a fast and slow dividing cell type. This switch is thought to be the cause of pathogenesis seen in AIDS patients. Due to its complex life cycle, *Toxoplasma* is difficult to study with traditional methods, and little is known of the molecular mechanisms controlling its growth. *Toxoplasma gondii* cell cycle control protein-protein interactions were studied using the yeast two hybrid system. This system detects protein-protein interactions by reporter gene production. Cyclins and cyclin-related kinases are integral cell cycle control proteins. Cyclin association with the cyclin-related kinase activates the kinase, which results in cell cycle progression. Previous research identified two cyclins and a cdc2-related kinase (CRK) in *Toxoplasma*. YTHS identified interactions between TgCyc1 and CRK, and TgCyc2 and CRK, supporting previous results. The YTHS was unable to detect interaction between 14-3-3, which interacts with itself, most likely due to the fusion protein construct. A beta-galactosidase luminescent assay quantified interactions between protein kinase1 (Pk1) and three unknown interactors and an XPMC2 homolog and its unknown interactor. TgCyc2 and TgCrk interactions will be assessed for interaction in vitro and the unknown interactors with TgPk1 and TgXPMC2 will be sequenced for identification. Further research will seek to identify interactions between other *Toxoplasma* cell cycle control proteins.

**Presentation Index:** G5**Time:** 10:20**Department:** Biological Sciences**Student Presenter(s)**

Roiko, Marijo

**Project Sponsor(s)**

Kvaal, Christopher

**Cloning and Characterization of Class 9 Human Aldehyde Dehydrogenase (ALDH9A1)**

There are three major isozymes of aldehyde dehydrogenases, i.e., ALDH1A1, ALDH2 and ALDH3A1, and a minor isozyme ALDH9A1 present in human kidneys. Which of these aldehyde dehydrogenases, in particular ALDH9A1, detoxify chloroacetaldehyde, a kidney toxin, is being investigated in our laboratory. In this regard ALDH9A1 has been cloned into an expression vector (pET21a). Its expression in a bacterial system has been investigated to optimize protein expression levels and enzyme activities using several aldehyde substrates including acetaldehyde, and gamma-aminobutyraldehyde. Currently experiments are being carried out on large scale so as to characterize the protein by incubating it with varying concentrations of chloroacetaldehyde and determine the initial rates.

**Presentation Index:** H1**Time:** 11:00**Department:** Chemistry**Student Presenter(s)**

Salad, Mohammad

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Synthesis, Purification, and Characterization of Ethylene Glycol Ether Aldehydes via Sern Oxidation**

Ethylene glycol ethers (EGE) are a group of solvents that are massively produced and widely used in aerosols and in cleaning material for both industrial and commercial settings. The wide use of these agents leads to increased exposure to individuals in these settings. This work is part of a collaborative project aimed at elucidating the role of aldehydes dehydrogenases in the metabolism of EGEs. A hypothesized route for this metabolism is the oxidation of the corresponding aldehyde via alcohol dehydrogenases followed by oxidation to its corresponding carboxylic acid via aldehyde dehydrogenases. A key intermediate in this oxidative process is the corresponding aldehyde. This compound is somewhat unstable, which makes purchasing it impossible. The synthesis, purification, and characterization of 2-butoxyethanal (BA), 2-propoxyethanal (PA), and 2-ethoxyethanal (EA) will be discussed. The aldehydes were produced via a swern oxidation of the corresponding alcohol. Organic washings and various vacuum distillations accomplished the purification of BA, PA, and EA. Characterization of the aldehyde is achieved using 300 MHz <sup>1</sup>H NMR with two significant peaks located at 9.7 ppm and 4.0 ppm. A gas chromatogram and mass spectrometer was also used to characterized the product and determine the purity.

**Presentation Index:** H2**Time:** 11:20**Department:** Chemistry**Student Presenter(s)**

Gross, Aaron

**Project Sponsor(s)**

Gregory, Daniel

**Genomic Analysis of Human Breast Adenocarcinoma MCF - 7**

*Ottelione A* is a natural product with strong antitumor activity. Currently the molecule is undergoing clinical trials for the treatment of solid tumors. The mechanism by which *Ottelione A* neutralizes tumor cells is not clear, however it is known to inhibit the polymerization of tubulins which is a quintessential component of cell division. Our goal for this research project is to establish the mechanism by which *Ottelione A* exerts its anticancer activity. In this regard we have developed a human breast carcinoma, MCF-7/0 subline, viz; MCF-7/*OttA*, resistant to *Ottelione A*. Our previous research involved microarray analysis to determine the alteration in molecular targets in the cell leading from the differential expression of mRNA in MCF-7/0 and MCF-7/*OttA*. We were able to identify about 50 different genes (out of a pool of 400 genes) with more than 50% difference gene expression. We then used the gene bank to elucidate their functions as far as signal transduction is concerned. We have continued our research using microarray analysis only this time we used the Human Toxicology and Drug Metabolism Microarray. We have isolated total mRNA from the parent MCF-7/0 and resistant MCF-7/*OttA* cells, determined the differential expression of mRNA in MCF-7/0 and MCF-7/*OttA* cell by microarray analysis and finally correlated the function of differentially expressed mRNA to signal pathways that leads to the drug resistance in the rogue cells. Our future aim is to isolate similar genes in the two cell lines that have a 50 % differential expression between each other and then use the gene bank to elucidate the pathways taken by them.

**Presentation Index:** H3**Time:** 11:40**Department:** Chemistry**Student Presenter(s)**

Ghose, Shourjo

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Breast Carcinoma Resistance to *Ottelione A*: Translocation and/or Over-Expression of MAD1 and MAD2 Proteins**

*Ottelione A* (*OttA*) is a very toxic anti-cancer drug, able to inhibit tumor growth in nanomolar concentrations by inhibiting tubulin polymerization. *OttA* blocks cells at the metaphase/anaphase junction of mitosis and triggers the cell signal cascade, prompting apoptosis. The mechanism by which *OttA* inhibits tubulin polymerization is not known, and as with other cytotoxic drugs, cancer cells become resistant to *OttA* over time. This presents a significant problem and much research has been dedicated to studying this phenomenon. Since the nucleus proteins MAD1 and MAD2 aid in the transport and polymerization of tubulin, one hypothesis explaining anti-cancer drug resistance is that the MAD proteins are either not expressed in the nucleus or are over-expressed outside of the nucleus. To test if altered localization of MAD1 and MAD2 proteins correlated with *OttA* resistance, an *OttA*-resistant human breast carcinoma cell line (MCF 7/*OttA*) was developed that was relatively insensitive to *OttA* as compared to the parent cell line (MCF 7/O). Both cell lines were cultured and subsequently lysed, which allowed for the separation of the nuclei from the cytoplasm. These cellular components were isolated by differential centrifugation and then the proteins were separated on polyacrylamide gels and transferred to a membrane. The proteins were probed with antiMAD1 and antiMAD2 antibodies, as the immunoreacted proteins revealed whether MAD1 and MAD2 were mislocalized and whether their expression levels were different.

**Presentation Index:** H4**Time:** 12:00**Department:** Chemistry**Student Presenter(s)**

Marine, Sasha

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Milton's Rhetoric: Words and Signs and Wonders**

For Milton, the word “sign” was as far and as close to the word “word” in meaning as it was from the word “wonder,” in keeping with the text traditions, both religious and secular, as well as the cultural traditions in which he worked. And for Milton these three words were located along a chained continuum of vocabulary one used to speak about language and the nature of knowing. The great Milton scholar Stanley Fish does not discuss the matter of wonders, or portents, content instead to remain with the first two of the three, but perhaps this is a gap in Milton studies that ought not to be left like so much like empty black space. A rhetorical constellation is needed for this space, not only so that more of the lessons being taught in Paradise Lost can be accessed, but also so that moderns can ponder this less printed text-oriented way of viewing rhetoric that is so foreign to us, whether we teach English, the Nature of Language, Rhetoric, or Natural Philosophy. At the same time, since we have moved the word “text” out of books and into windows, films, pictures, and other places of staging, perhaps we can learn from Milton in some ways to read these things of the eyes more richly. And if, as Milton believed would, one who “like a comet” burns (Book II, Line 708) comes, in whatever form we take the coming, before our very eyes, we will not be held by our amazement. We will not, if we have listened to Milton, be as deceived, nor will we consider such a wonder as something unrelated to a “word” and what a “word,” that is, what rhetoric, truly does and ought to be admitted to be doing, in the cosmos.

**Presentation Index:** 11**Time:** 11:00**Department:** English**Student Presenter(s)**

Glynn, Alexandra

**Project Sponsor(s)**

Philippot, Raymond

**Native Americans' Reproductive Justice**

Limited access to reproductive health care is the greatest Native American women's health issue in the United States. By restricting access to health care and sterilizing these women against their will, the government is still perpetuating the genocide of the Native American community. Their oppression is linked to a long history of targeting Native women; the conquest is the backbone for the contemporary struggle for reproductive justice. Reproductive rights and reproductive justice is used interchangeably in this conversation. Absolutely, the reproductive health care system is the greatest Native American women's health issue in the United States, because if the problem is not fixed it will result in the extermination of the Indigenous people.

**Presentation Index:** 12**Time:** 11:20**Department:** English**Student Presenter(s)**

Schleeter, Stacy

**Project Sponsor(s)**

Dorn, Judy



***The Singing Bone for Orchestra***

*The Singing Bone for Orchestra* is a tone poem created to tell the Grimm Brothers' tale by the same name. Two brothers set out to kill a dangerous boar, in hopes of winning the princess' hand in marriage. The younger, good-natured brother kills the boar, but his wicked older brother stabs him in the back and marries the king's daughter. Later, a bone of the younger brother is uncovered by a shepherd, who makes a flute out of it. Upon playing it, the bone tells the younger brother's story. The shepherd plays it for the king, who then kills the older brother. *The Singing Bone* won the 2006 James and Paula Nelson Young Composers' Competition and will be played by the Duluth Superior Symphony Orchestra at their Young People's Concerts (Thursday, April 6th at 9:20 and 10:40) and their Family Concert (Sunday, April 9th at 3:00 P.M.).

**Presentation Index:** I3**Time:** 11:40**Department:** Music**Student Presenter(s)**  
McCarron, Charlie**Project Sponsor(s)**  
Campbell, Brian

**Body Image, Media, and Sexuality in Older Women**

The common images of age, as portrayed in media and comedy, include frailty, illness, and asexuality. Images of older adults having sex are something to be ridiculed in popular culture, and the sexual identity of older adults slips away as age progresses. Sexuality and age are still too much of taboo topics for most people to discuss openly. Because many issues of aging are associated or linked to one's awareness of mortality, they are not readily discussed until one has to deal with them. There must be a frank, general public discussion about sexuality and older age. In order for older women to enjoy a fulfilling and satisfying sexual life, they must be able to understand the impact that cultural messages have had on them. In order for there to be an open dialogue between older adults and their partners and medical professionals, and to break down that taboo, there must be a forum for older adults to discuss openly their sexuality and sexual experiences. That is the focus of this project: to provide a forum for older women to relate their lifetimes' worth of experiences surrounding their sexuality and their body, and to connect those experiences with the changes which aging has wrought. There are four main research questions that will form the basis of this project: Is there a connection between women's self esteem and sexuality? Is there a connection between media images and older women's self esteem? How do physical body changes affect sexuality in older women? What are the experiences of the older women in this study relating to self esteem, body image, and sexuality, with regards to aging?

**Presentation Index:** J1**Time:** 11:00**Department:** Women's Studies**Student Presenter(s)**

Dwyer, Cecelia

**Project Sponsor(s)**

Berila, Elizabeth

**Empowering Women Through Feminist Research**

This panel aims to explore feminist research through two specific projects. One examines what shapes and is shaping the racial identities of young women of color. The other is centered on women living independently, alone and on their own. Both projects use interviews in their methodology in order to validate women's voices. The research includes personal experience of the presenters. Class, gender and race will form intersectional analyses within this presentation. The goal is to shock, enlighten and empower.

**Presentation Index:** J2**Time:** 11:20**Department:** Women's Studies**Student Presenter(s)**

Sherman, Ruth

Ballengee, Mary

**Project Sponsor(s)**

Berila, Elizabeth

**Hmong: Bride Price, Kinship, and Marriage**

Imagine long white dress, bouquets of flowers, and Canon in D playing in the background. Imagine tuxedos, flurries of dresses, and rice being thrown. Sounds like a wonderful wedding is taking place, right? You can even see yourself walking down that aisle feeling ecstatic about your wedding that YOU planned. Now imagine this: hundreds of family, friends, and long-lost relatives tying white yarn on your wrist. Your mother, sisters, cousins, and aunts fluttering around to get food on the table for the guests. Your father, brothers, and uncles negotiating the cost of this day, YOUR WEDDING DAY. Sounds like a nightmare? Not at all. This is an ethnographic study describing a traditional Hmong wedding in a traditional Hmong culture.

**Presentation Index:** J3**Time:** 11:50**Department:** Sociology and Anthropology**Student Presenter(s)**

Vang, Wang

**Project Sponsor(s)**

Schultz, Emily

**Visual Tourism**

This paper presents an ethnographic study of tourism in Moab, Utah. It explores the practice of traveling for pleasure as a primarily visual activity. Tourists travel for the purpose of seeing for themselves images that they are familiar with because of a process of selection, replication and presentation. Providing goods and services to help feed these tourists' hungers for visual consumption has led to the commodification of the Moab area's land and nature, culture and heritage, and community and people; at the same time, changing global and national trends in tourism present new issues that Moab citizens must constantly address in order to maintain a community based identity. Managing the many stresses that have developed in connection with Moab's recent tourism boom have continued to reshape the relations between the town's historically factional community. Author Keywords: Anthropology, Tourism, Visual Consumption, Commodification.

**Presentation Index:** J4**Time:** 12:10**Department:** Sociology and Anthropology**Student Presenter(s)**

Rogers, Jordan

**Project Sponsor(s)**

Schultz, Emily

**Measuring Risk Aversion: Hypothetical Versus Real Decisions**

This study tests whether subjects' responses to the Weber et al (2002) domain-specific risk-attitude scale (DSRAS) predict subjects' decisions in an environment with financial stakes. Subjects were administered the DSRAS. After completing the survey subjects were asked to select which of six different lotteries, framed as gambles, they wish to play. The lotteries include one sure thing; four of the remaining five lotteries increased (linearly) in expected payoff and risk. The sixth lottery has the same expected payoff as the riskiest of the previous five, but entails higher risk. We compare subjects' DSRAS scores with their lottery selections to test the validity of the DSRAS as a predictor of actual risk attitudes regarding financial decisions. We find that The DSRAS does predict subjects' gamble choices. However, when we segment the data by sex, we find that it is men's choices that can be predicted; women's choices are not significantly correlated with their DSRAS scores.

**Presentation Index:** K1**Time:** 11:00**Department:** Economics**Student Presenter(s)**

Lugovskyy, Oleksandr

**Project Sponsor(s)**

Grossman, Philip

**Leadership in Groups: An Experimental Study**

We describe groups which make collective decisions through neither markets, nor contracts, nor any grant of authority. Instead uninformed agents choose to follow their informed leaders absent any obligation to do so. This apparently gloomy picture of sluggish leaders and ignorant followers produces efficient results, that could not have been produced if all agents were informed. In many cases incentive and coordination problems are solved even though every agent has an incentive to free ride. We provide evidence that agents make efficient decisions less often if they are fully informed. In this paper therefore, efficiency requires an information failure.

**Presentation Index:** K2**Time:** 11:20**Department:** Economics**Student Presenter(s)**

Deters, Travis

**Project Sponsor(s)**

Komai, Mana

**Does Funding Matter in Education?**

Despite leading the world in spending per student, the United States Education System still lags far behind other industrialized nations. In addition, some politicians still claim that more of society's scarce resources are needed to improve America's education crisis. This paper explores those politicians' hypothesis using regression analysis. Are more resources really necessary, or could government policy simply reallocate resources and improve student's education? From our regression we conclude the latter. That is, fixing the education system does not require more resources, but rather a more efficient distribution resources already allocated for education purposes.

**Presentation Index:** K3**Time:** 11:40**Department:** Economics**Student Presenter(s)**

Zabka, Matthew

**Project Sponsor(s)**

Hughes, Patricia A.

**The Decline of Resorting in Minnesota**

Lakeside resorts are a vital component to Minnesota's tourism industry, yet they are one of the fastest declining industries in the state. This presentation discusses the factors attributing to the decline in the lakeside resort industry, including rising property taxes, increasing property values, and changing travel trends. There are several major parties affected by the rapid changes occurring in the resort industry, which is comprised of resort owners/operators, vacationers, and the local business. Through personal interviews and investigative research, the study findings suggest that the resort industry will likely continue to evolve, as resort owners adjust to changing travel trends and local economic pressures.

**Presentation Index:** L1**Time:** 11:00**Department:** Geography**Student Presenter(s)**

Wood, Heidi

**Project Sponsor(s)**

Baker, Randal

**Analysis of Fuel Economy for MN Vehicles with Critical Habitat Plates**

The purpose of the research paper/presentation is to examine the relationship between vehicles with Minnesota Critical Habitat license plates and the fuel economy of the vehicles which have these plates. The intent of the research is to examine this relationship and identify any patterns in conservation behavior between vehicles with Critical Habitat plates (a positive contribution toward the environment), and the fuel economy of owners vehicles, another way in which a person's relationship with the environment can be examined.

**Presentation Index:** L2**Time:** 11:15**Department:** Geography**Student Presenter(s)**

Thompson, Bradley

**Project Sponsor(s)**

John, Gareth

**Geography Awareness**

The subject that I want to cover for my geography 432 project is geography knowledge between the generations. I will compile a short somewhat simple written test that will measure the knowledge of the individual. I will also have a couple simple survey questions to find out some basic information. Some of the questions that I look to answer in the paper are, why is there a gap in knowledge? Why have we moved away from geography in the US? What can be done to educate the next generation? I hope to prove that the older generations have more knowledge than the younger generations. This should be the case because geography was stressed more in more in the past than it is right now. Other studies have shown that current college students have very little knowledge of the world around them and my study will take it a step farther and show the gap in knowledge between the generations. Overall, I think this will be a very interesting subject to study and should help to open a few eyes to what has happened in our society.

**Presentation Index:** L3**Time:** 11:30**Department:** Geography**Student Presenter(s)**

Obermoller, Jonathan

**Project Sponsor(s)**

John, Gareth

**Geographic Knowledge of the Middle East**

A knowledge of political geography is vital to understanding foreign policy. My project seeks to explore the knowledge of a select group of SCSU students related to the political geography of the Middle East, specifically Afghanistan, Iran, and Iraq. These countries are major areas of concern for the United States and its current Middle East foreign policy. My project will test the knowledge of certain students, analyze the results, and discuss what the results mean. The study is important because if students are uninformed about the political geography of the Middle East they are less able to understand proper foreign policies. Since we currently have troops deployed across the globe, it is important that voters understand how to recognize appropriate strategies for foreign policy.

**Presentation Index:** L4**Time:** 11:45**Department:** Geography**Student Presenter(s)**

Terry, John

**Project Sponsor(s)**

John, Gareth

**Iconography of Landscape in the Minnesota State Flag and Commemorative Quarter**

Iconography has traditionally been the study and interpretation of images in art. These images may be symbolic to religious teachings, or as previous studies have indicated, may also be representational of the physical, cultural, or even political geographical landscape. Iconography of landscape is not limited to art, it can also be studied in national flags, currency, and coins. Through the use of secondary text research, this study seeks to understand the effect that time has on the similarities and differences between the images found on the Minnesota state flag and the new commemorative quarter. Are the perceptions of the Minnesota landscape different between when the flag was established and when the coin was designed? If so, what are the factors that influence the perception? Could they be cultural diversity, economic situations, or even due to political correctness?

**Presentation Index:** L5**Time:** 12:00**Department:** Geography**Student Presenter(s)**

Anissa, Kelly

**Project Sponsor(s)**

John, Gareth

**An Analysis of the Socioeconomic Stratification of New Urbanism Development**

Throughout history neighborhoods, small towns, and metropolitan centers across the country have undertaken monumental changes. With these changes many different design elements and development styles have been used in an attempt to create the utopian community. One style alone has defined its self as the modern poster child for community development as that perfect community, "New Urbanism." Although it has been criticized for its grandiose portrayal as a socially diverse development, highly designed layout, with extravagant amenities, and increased social capital. These communities are still seen as the best alternative to sprawling suburbia. With the utilization of smaller lot sizes, alley ways, high density construction, and the inclusion of green space have truly grabbed the attention of planners and developers across the country. This study tests the New Urbanist claims that these developments are socially diverse through their mixed land uses and variety in housing stock. It also examines the wider role within communities to discern whether the New Urbanist style is a viable development option for communities. Interviews and sight visits were conducted with developers and community officials of four developments and their subsequent communities. Analyses of the average housing market values at the neighborhood level were conducted and were supplemented with qualitative data. The findings provided insight into the relationships between New Urbanist developments, their surrounding communities, and their social diversity.

**Presentation Index:** L6**Time:** 12:15**Department:** Community Studies & Geography**Student Presenter(s)**

Sexton, Daniel

**Project Sponsor(s)**

Rigopoulou-Melcher, Aspasia

John, Gareth

Wall, David

**Assessing Cognitive Representations of Number Through Excitatory and Inhibitory Priming**

The cognitive representation and psychological instantiation of numerical concepts are not fully understood. Algorithms that guide mathematical operations, conceptual frameworks that form the basis for comparisons of magnitude and properties of numbers, and numeration are processed in different areas of the brain, and yet, tasks that address one of these areas usually also activate the other areas. For example, when one tries to determine the greater of two values, neural networks that correspond to mathematical operations and numeration are also activated in memory. This activation occurs below the level of consciousness. A goal of cognitive science is mapping the organization of memory for numerical concepts, but because this involves subconscious processes, methodological problems arise. For example, if one wishes to observe the effects of implicit memory phenomena on task performance, it is necessary to control for the potential interference of explicit memory. In this series of experiments, priming tasks were used to determine the content and the form of mathematical memory networks. A task is primed when two concepts, a prime and a target, are presented in temporal sequence. If the concepts are related, the second concept is processed more quickly because the relevant memory network has been affected by the first concept. Priming effects become chronometric, time based, measures of relatedness between prime and target. Three approaches drawn from studies of semantic memory, categorical priming, deduced categorical priming, and subconscious seriation, were used to elicit and represent patterns of relation in numeracy. The data suggest that such techniques may be useful in teaching mathematics to students with cognitive disabilities.

**Presentation Index:** M1**Time:** 11:00**Department:** Special Education**Student Presenter(s)**

Lamo-Nelson, Teresa

**Project Sponsor(s)**

Pickle, Michael

**Review of Therapies for the Treatment of Multiple Sclerosis**

Multiple Sclerosis is a disease that affects the central nervous system, specifically, the myelin sheaths surrounding axons in nerve cells. The disease tends to be progressive and can be a source of many debilitating problems for its hosts. Current theory suggests viral and/or autoimmune concepts as the etiology of the disease. Therefore, much of the research on multiple sclerosis has been done in these areas. The purpose of this paper is to give a comprehensive description of the disease. In addition, past and current disease-modifying drug therapies (e.g. interferon beta 1-b, glatiramer acetate) used for the treatment of multiple sclerosis, as well as alternative therapies (e.g. hyperbaric oxygenation therapy) are reviewed.

**Presentation Index:** M2**Time:** 11:20**Department:** Psychology**Student Presenter(s)**

Allen, Seth

**Project Sponsor(s)**

Lokken, Jayne



**Families with Adopted Children**

This essay examines various communication phenomena of cultural identity through the eyes of a Korean-American in a predominately White society by conflating muted group theory and standpoint theory. These concepts are applied to the life of a Korean adoptee that grew up in a broken and abusive home. Muted group theory originated by looking at how women are silenced in society through the use of masculine language. Standpoint theory focuses on the social groups from which humans view the world. How is one silenced simply because of who they are, what they look like, and what their social standing is? How do these things shape the person? How does being Korean-American add to the mixture of emotions? This essay explores communication difficulties of life through the eyes of a minority.

**Presentation Index:** M3**Time:** 11:40**Department:** Communication Studies**Student Presenter(s)**

Murphy, Angela

**Project Sponsor(s)**

Spry, Tami

**Effects of Military Activity on Vegetation and Wildlife at Camp Ripley**

For many years Camp Ripley Military Installation, outside of Little Falls, Minnesota, has been the site for hundreds of training activities. This 53,000 acre facility is also home to plant and animal life unique to Central Minnesota. The environmental office at Camp Ripley has been conducting numerous studies over the last fifteen years concerning the relationship between military activities and the effect those activities has on the plants and wildlife within the installation. These studies have been extremely detailed, with thousands of observations on various characteristics taken from approximately 200 plots throughout the camp. Given this enormous data set, the purpose of this project was to use statistical software to sort, analyze and interpret the effect the military activity has had on the wildlife. SAS, Minitab, Excel, and Access were used in summarizing the data. Comparisons were made between core plots (plots with minimal regular activity) and special use plots (plots with particular types of activities), to determine the effect of the military use on wildlife and vegetation.

**Presentation Index:** O1**Time:** 2:00**Department:** Biological Sciences & Statistics and Computer Networking**Student Presenter(s)**

Rohde, Scott

**Project Sponsor(s)**

Restani, Marco

Robinson, David

**Effects Of Post-Fire Fuels Treatments On Vertebrate Communities In Southeastern Montana**

Federal policy calls for the removal of coarse woody debris (CWD) following forest wildfire in an attempt to reduce fire hazard. Many small mammal and cavity nesting bird species rely on CWD for cover, foraging habitat, and breeding sites in the post-fire environment. The response of small vertebrates to the removal of CWD is unknown. We investigated how post-fire salvage logging in a southeastern Montana ponderosa pine (*Pinus ponderosa*) forest affected small mammal and cavity-nesting bird populations in 2004 and 2005. We used point counts and distance sampling methods to estimate the density of cavity nesting birds on control (n = 16) and salvage (n = 19) treatments. We also used Mayfield estimates to compare nest survival of cavity nesting birds between control (n = 2) and salvage (n = 2) treatments. We used live traps arranged in trapping webs (r = 130 m) to estimate density on control (n = 2) and salvage (n = 2) treatments using distance sampling methods. Small mammal density was greatest on the control treatment in both years. Small mammals may have benefited from higher volume of ground CWD created by harvest operations. Density of cavity nesters was greatest on the control treatment. Nest survival was similar between treatments, but abundance of active cavities was greater on the control treatment where average snag size was larger. Small vertebrates appear to require CWD and adequate amounts should be retained following wild fire to maintain populations.

**Presentation Index:** O2**Time:** 2:20**Department:** Biological Sciences**Student Presenter(s)**

Kronland, William

**Project Sponsor(s)**

Restani, Marco

**Distribution and Habitat Associations of Ferruginous and Swainson's Hawks in North Dakota**

Swainson's (*Buteo swainsoni*) and ferruginous hawks (*B. regalis*) have shown recent declines in parts of their range. These declines may be related to loss of grassland habitat and decreases in Richardson's ground squirrels (*Spermophilus richardsonii*), an important prey species for both hawks. These hawks are Species of Conservation Priority in North Dakota, but distribution and habitat associations in the state are unknown. I surveyed for nesting hawks on 118 townships east of the Missouri River in the 2004 breeding season and 54 townships west of the river in 2005. I found 42 occupied ferruginous hawk nests and 182 occupied Swainson's hawk nests. No hawk nests were found in the Agassiz Lake Plain, while ferruginous hawk nests were only found in the Northwestern Glaciated and Great Plains, where land use was mainly grazing and hayland. Highest densities of Swainson's hawks were also found in these areas. I used ArcGIS 9.0 and North Dakota GAP analysis data to analyze land cover within 1 km of nests and within each township. On average, ferruginous hawk nests were surrounded by more prairie and less cropland than Swainson's hawk nests, although nests of both species were surrounded by a significant amount of prairie and planted grassland. Logistic regression models showed that at a landscape scale, prairie was an important variable for ferruginous hawks while planted grassland was more important for Swainson's hawks. Habitat use models will help identify areas of crucial breeding habitat for these hawks in North Dakota.

**Presentation Index:** O3**Time:** 2:40**Department:** Biological Sciences**Student Presenter(s)**

McCarthy, Clara

**Project Sponsor(s)**

Restani, Marco

**Investigation of Intersex in Mississippi Fishes**

Histology is a critical aspect of research throughout the biological research community. It is the link between structure and function of a specific tissue. We explored the possibility of a connection between the presence of endocrine disruptors, such as estrogens, in the Mississippi River to the intersex and abnormalities in smallmouth buffalo and the common carp. Estrogenic compounds may reduce the reproductive potential of fish populations by causing intersex, decreased gonad size, and altered sex ratio. Intersex, a condition in which both male and female gonadal tissues are present in the same gonad has been found in fish exposed to sewage effluent (Goodbred et al., 1997, Jobling et al., 1998, Vigano et al., 2001, Nolan et al., 2001). Sexual differentiation in fish is plastic and can be altered by exposure to estrogens or androgens. Such exposure may cause an intersex condition to occur or cause a preponderance of males or females depending on whether the exposure was to an androgen or estrogen (Baldwin and Li, 1945, Yamazaki, 1976, Kobayashi et al., 1997, Gimeno et al. 1998a, 1998b.) This research is attempting to determine if endocrine disrupting chemicals are having a significant effect on the gonadal histopathology of male smallmouth buffalo and common carp. The collection site is on the St. Paul Mississippi river after the sewage effluent channel. Fish were stunned by electro-shocking, netted, and deeply anesthetized with 1 % phenoxyethanol. Blood samples were collected from the caudal vasculature using a heparinized syringe and stored on ice until samples could be centrifuged. Fish were then sacrificed and testis and livers were removed for histological analysis. Results of these studies will be presented at the Colloquium.

**Presentation Index:** O4**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Allen, Angela

Loes, Tim

**Project Sponsor(s)**

Schoenfuss, Heiko

**Music Festivals in the Minnesota North Woods**

My research paper will start with describing the city of Detroit Lakes, Minnesota, as a tourist destination. From there I will relate two major events that draw tourists into the city, they are the 10,000 Lakes Festival and We Fest which both occur at the same venue, the Soo Pass Ranch. I will look at where people come from, the differences between the two events and the sense of place that each one entails.

**Presentation Index:** P1**Time:** 2:00**Department:** Geography**Student Presenter(s)**

Hessler, Franklin

**Project Sponsor(s)**

John, Gareth

**Green Urbanism within Minnesota**

Green Urbanism is a phenomenon within planning that has been used for many years in Europe but is now starting to catch on within the United States. As planning becomes more of a concern to everyday people, the idea of incorporating green urbanism tactics becomes more apparent. This research will try to identify some parts of green urbanism that are being used within the upper Midwest, while at the same time determining the identity of green urbanism within the planning field.

**Presentation Index:** P2**Time:** 2:15**Department:** Geography**Student Presenter(s)**

Holper, Brenton

**Project Sponsor(s)**

John, Gareth

**Threats to the Vegetation of the Nerstrand Big Woods State Park: A Case Study of The Minnesota Dwarf Trout Lily**

The topic that I will be researching is going to be a study of the endemic flower called the Minnesota Dwarf Trout Lily. It is found in only a few select areas in Minnesota and nowhere else in the world. It is found in bloom in The Nerstrand Big Woods State Park in mid April and May. I am going to base my research methods on text based information. This will include an overview of why this plant is endemic and why it should be protected. I am also going to state some laws protecting this plant. I am going to give some history of this state park and its regulations pertaining to the Minnesota Dwarf Trout Lily. I'm going to research some of the threats to this plant and what are some other species of plant that are found in the same areas as this flower. The information that I will be researching for will be on topics such as siltation in rivers, soil erosion, pollution, threats to plants from animals, etc. It will be mostly secondary data and I will be providing a synthesis on how this endemic flower is surviving and coping between the struggles of physical geography and cultural geography. Culture wants to build the park up for recreation and the question is can the physical aspect survive? My basic thesis is "Are there any threats to the vegetation of the Nerstrand Big Woods State Park?" If so what are they and how do they affect this plant.

**Presentation Index:** P3**Time:** 2:30**Department:** Geography**Student Presenter(s)**

Chad, Miller

**Project Sponsor(s)**

John, Gareth

**The Population Structure of the One Horned Rhinoceros in Nepal**

Despite more than two decades of conservation efforts, only limited information is available on the population structure of the One Horned Rhinoceros in Nepal. This paper reports on the geographic distribution of rhinos in Nepal in relation to habitat quality and describes an inventory and monitoring system that can be applied across the entire range of the species. Using information from previous studies, interviews with local wildlife and forest firms, and digital thematic mapper data, I have identified two main populations of rhinos in Nepal; The Royal Chitwan National Park and Royal Bardia National Park. Rhinos in both populations survive in isolated forest remnants of what was once a continuous subtropical forest zone lying south of the Himalayas. These areas have the highest ratio of good-quality habitat that supports breeding populations. Estimates of potential Rhino habitat and data on habitat used by Rhinos demonstrate the need to expand current management beyond parks to encompass the entire land base supporting these fragmented populations so that small Rhino populations can be managed as ecosystem. Further, I have also analyzed the decreasing rhino population primarily due to poaching and discussed the conservation issues.

**Presentation Index:** P4**Time:** 2:45**Department:** Geography**Student Presenter(s)**

Khadka, Siddarth

**Project Sponsor(s)**

John, Gareth

**Use of Topography in the Maoist Uprising in Nepal**

This paper will focus on the use of topography by the Maoist Rebels in Nepal. Nepal is a country situated at 28 N, 84 E. It's a land locked country that lies between India and China. At present, Nepal is under the great political stress. There is a Maoist insurgency in Nepal since last 12 years. The Maoist Rebels want to throw out the king and wants to have the Republic government. Maoists have created a real chaos and the situation that looks like a civil war. They are termed as terrorist by the government of Nepal as well by the International group. With all these things going on in Nepal this paper will present some fact on how the topography of Nepal is helpful for the uprising of Maoist.

**Presentation Index:** P5**Time:** 3:00**Department:** Geography**Student Presenter(s)**

Chand, Smriti

**Project Sponsor(s)**

John, Gareth

**Changing North Shore**

The change in the landscape in this region extends toward the Canada Border as well. I'm hoping to find out what may be the stem of the urban sprawl in this region when it has been located here for many generations without this type of growth. Closer to the Duluth region we are seeing Resorts popping up that are eating up much of the lakeshore in this region. How can the lake be enjoyed when it's polluted with Growing developments along the lake side. Granted this natural beauty is addicting and I see the need for more resorts and other recreational facilities. But what is price the local are paying to have Tourist visit there region. Is this helping or hurting the region?

**Presentation Index:** P6**Time:** 3:15**Department:** Geography**Student Presenter(s)**

Denne, Jessica

**Project Sponsor(s)**

John, Gareth

**Sparse Non-PDE Generated Matrix-vector Product Kernel Performance Enhancement**

A great deal of effort has gone into tuning dense linear algebra kernels. Tuning a kernel refers to modifying the kernel in some way to improve performance. The modifications could be based on the properties of the matrix, platform, or both. Less research has been dedicated to sparse kernel tuning. The Optimized Sparse Kernel Interface (OSKI) from the Berkeley Benchmarking and Optimization Group (BeBOP) is a recently released software package providing automatically tuned sparse computational kernels. One of the most effective optimizations employed by OSKI is to extract small, dense blocks (submatrices) from a sparse matrix and perform dense operations on those blocks. This technique has proven to be most effective on matrices generated from the discretization of partial differential equations (PDEs), which comprise the family of sparse matrices that is most commonly encountered. Blocking is less effective for other classes of problems including those involving matrices generated from circuit problems, and from mid-range integral equations. Circuit matrices are less dense than PDE matrices, while mid-range integral equation matrices are more dense than PDE matrices. The Trilinos Project, developed primarily at Sandia National Laboratories, targets the development of robust numerical algorithms. Trilinos utilizes existing libraries for improving performance including the various implementations of the BLAS, but does not currently have access to hand tuned matrix-vector product kernels that are customized for non-PDE generated problems, or any automatically tuned sparse numerical kernels. Our current efforts focus on the design and implementation of hand tuned matrix-vector product kernels for non-PDE generated matrices as well as making OSKI functionality available to Trilinos via a templated Trilinos package called Kokkos. An interface to optimized sparse matrix-vector product kernels is a key contribution because it makes the kernels accessible to the many scientific applications that rely on Trilinos for solver capabilities.

**Presentation Index:** R1**Time:** 2:00**Department:** Computer Science**Student Presenter(s)**

Willenbring, James

**Project Sponsor(s)**

Anda, Andrew

**Interaction of Ruthenium Complexes with DNA**

Cancer drugs are a never ending field of study. Many drugs are found to provide cytotoxic activities in human breast tumor cell lines. Recently transition metals have entered the picture as having applications to this field. A class of benzimidazole-ruthenium complexes and their ligands are also shown to have cytotoxic effect on certain breast cancer cell lines. How these compounds bring about cytotoxicity is not clear and we hypothesize this to be due to their interactions with DNA. The combination of analytical techniques such as UV-vis spectroscopy, Proton NMR, MALDI-TOF-MS, Fluoremetry, and gel electrophoresis will allow us to determine the Ruthenium complex/ligand interactions with DNA. This project is allowing the further understanding of the conceptual basis of the ruthenium complexes and their anticancer properties.

**Presentation Index:** R2**Time:** 2:20**Department:** Chemistry**Student Presenter(s)**

Krekelberg, Elizabeth

**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Fluoxetine Exposure Experiment**

Fluoxetine (Prozac) is a widely prescribed anti-depressant that provides a therapeutic effect by inhibiting serotonin up take within the central nervous system. The vast production and distribution of fluoxetine has had a direct influence on the increasing concentrations found within natural aquatic environments. It has been hypothesized that fluoxetine is a potential endocrine disrupting compound and has been found within sewage effluents throughout the United States. In this experiment male fathead minnows were exposed to 100 ig/ L fluoxetine over a 10 day period, to determine if fluoxetine has endocrine disruption abilities. Three tanks containing population groups of 10 male fish per tank were set up for both treatment and controls. The exposure contained a mixing tank that distributed the 100 ig/L fluoxetine throughout a 24 hour period. Once the compound has been mixed with 10 liters of distilled water, the mixture was then dispensed into a splitter tank that is connected to a flow through system pumping well water through the entire system replicating the environmental exposure conditions found near the sewage effluents.

**Presentation Index:** R3**Time:** 2:40**Department:** Biological Sciences**Student Presenter(s)**  
Grove, Kent**Project Sponsor(s)**  
Schoenfuss, Heiko**Biomedical Sensors**

A medical device manufacturer in Central Minnesota wishes to improve the quality and productivity of its sensor manufacturing process. In particular, there is a need to standardize the process, reduce process time, and create more throughputs. Standardizing the process will reduce variation in terms of human interaction, resulting in better sensors and a maintained minimal rejection rate. Reducing process time will be done by designing new molds and tools for removing the sensors. Instead of pushing over 400 sensors out one at a time, the sensors will all be pushed out at the same time. Increase throughput by improving the furnace to at most double the current throughput. With these improvements, TriVirix will be able to save money by keeping rejection rate at a constant low and reducing man hours. The throughput of sensors will also increase.

**Presentation Index:** R4**Time:** 3:00**Department:** Mechanical and Manufacturing Engineering**Student Presenter(s)**  
Thao, Pheng  
Yang, Data  
Niemuth, Kasey**Project Sponsor(s)**  
Baliga, Bantwal

**SCSU Survey Coverage of Fall 2005 Statewide Survey**

Every year the SCSU Survey conducts a statewide survey of Minnesota adults. On the 2005 fall survey there were a plethora of questions covered. The study consisted of topics that the student directors felt reflected the major issues of interest to the public at that time. It covered such topics as Hurricane Katrina, cell phones, abortion, capital punishment, governmental reforms and views towards elected officials, and a variety of other political questions. We hope to share the results of the survey as well as insights on the methodology used to conduct public opinion research.

**Presentation Index:** S1**Time:** 2:00**Department:** Political Science**Student Presenter(s)**

Tim Ehlinger

Heather Schwebach

**Title***Abortion*

Elizabeth Walters

Sara Lohrman

*Hurricane Katrina/Cell Phones*

Nicole Severson

Brittany Speich

*Capital Punishment*

Matt Bromelkamp

Ngoc Phan

*Feeling Thermometer*

Will Floersheim

Jackie Swanson

*Political Questions***Project Sponsor(s)**

Frank, Stephen

Hammes, Michelle Kukoleca

Wagner, Steven



**Statistics and Baseball**

The purpose of this project is to assess the “moneyball” paradigm. The “moneyball” paradigm refers to a theory suggested by Bill Beane, the general manager of the Oakland A’s, in order to build a successful baseball club, especially for those clubs with a low-income. Beane’s proposal is that on-base percentage and slugging percentage are the statistics which best reflects a player’s ability. He also proposes that there are many specialists, those that excel in one or the other, who have smaller salaries than others. My project will assess this method by classifying players on all the Major League Baseball teams over the last ten years. The specific players that will be evaluated are those which have either an on base percentage of .360 or greater or a slugging percentage of .490 or greater or a player which meets both of these requirements. Players that excel in only one of these statistics are considered specialists. Players that excel in both of these statistics (OBS and SLG) would be considered generalists. These players are typically considered “moneyball” players. Initial results have shown that it is more crucial to have generalists in the lineup for a greater amount of runs to be scored. Having initially observed this, it may be suggested that an adjustment should be made to the “moneyball” paradigm.

**Presentation Index:** T1**Time:** 3:00**Department:** Mathematics**Student Presenter(s)**

Walters, Elizabeth

**Project Sponsor(s)**

Branson, William

**DNA Sequencing of *Toxoplasma gondii***

*Toxoplasma gondii* is a protozoan parasite that can cause the disease toxoplasmosis in humans. Common hosts for this parasite are cats that are infected by the consumption of infected rodents. The organism can then be transmitted to humans by contact with cat feces. The parasite can also be introduced into a human host by the consumption of undercooked meat. Infection by *Toxoplasma gondii* can cause serious birth defects. The genome of *Toxoplasma gondii* has been sequenced as well the cDNA library and some genes and proteins have been identified. Our objective is to sequence cDNA of *Toxoplasma gondii* to identify expressed genes. The protocol for the sequencing will be described followed by the DNA sequence that was obtained.

**Presentation Index:** T2**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Christian, Curt

**Project Sponsor(s)**

Kvaal, Christopher

**The Role of Leptin and N-methyl-D-aspartate (NMDA) Receptor Activation in Linking Nutrition to Reproduction**

Administration of leptin during undernutrition improves reproductive function. Whether this occurs at the level of the hypothalamus, pituitary, or gonads is not yet clear. The neurotransmitter, glutamate, which works through the NMDA receptor, positively affects the reproductive axis in mammals. The goal of this experiment was to define the potential roles of leptin, and the activation of the NMDA receptor in linking nutrition to reproduction. It also determined whether or not leptin potentiates or blunts the effect of glutamate receptor activation on Leutinizing Hormone (LH) secretion during either fasting or refeeding after a chronic fast. Rats were ovariectomized and fitted with estrogen implants. Two weeks after ovariectomy, the rats were either fed or feed-deprived for at least twenty four hours. Each of these two groups was subjected to leptin or saline injection. Blood samples were collected through a jugular cannular every fifteen minutes for three hours (Period I). There after, the rats were subjected to NMDA or saline treatment, and frequent blood samples collected for 30 min (Period II) and finally for another 30 minutes (Period III). During Period I, LH levels were lower in the feed-deprived rats, relative to the fed rats. Injection of NMDA increased LH secretion in both leptin and saline treated rats ( $p>0.05$ ). No effect of NMDA on LH secretion was observed in fed deprived rats. These results suggest that the effect of NMDA is greater in the fed, than the fasted state. Further, leptin may not potentiate the LH releasing ability of NMDA.

**Presentation Index:** T3**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Kirabo, Annet

**Project Sponsor(s)**

Gazal, Oladele

**Meeker County Elementary Parent Assessment**

Amidst an era perplexed by what many have coined an epidemic, the obesity rates of our nation's children continues to be on the rise. In order to curb these staggering statistics, experts have emphasized the importance of establishing healthy dietary practices along with physical exercise at a young age. Much of this responsibility lies within the realm of parental censorship. However, since most children are enrolled in the public school system, it is important for parents to realize that their children, and the healthcare practices they adopt, are influenced by others as well. Within a typical school day, which lasts about seven hours, is the incorporation of physical activity being honored? As nursing students at St. Cloud State University, we could not answer this question, but we did address a similar one: did the parents of the children in the Meeker County School districts believe this was being done? This was the objective of our research. Our method consisted of conducting a quantitative study using a Likert Scale survey developed by our research team. Our data was obtained from a convenience sample of 115 parents from six elementary schools in four separate districts in Meeker County, Minnesota. In general, our findings indicated that parents are not well informed about how much physical activity their children participate in during school hours. Many of the parents expressed the opinion that their children would benefit both physically and behaviorally from more time spent in physical activities. Based on this data, we were able to recommend that these school districts seek to keep parents more informed about their children's daily routines and that they focus on incorporating more opportunities for physical activity into the curriculum.

**Presentation Index:** T4**Time:** 3:00**Department:** Nursing Science**Student Presenter(s)**Jessen, Jen  
Olson, Kari  
Ratike, Dana  
Ouke, Nicole  
Besserra, John  
Wirth, Justin  
Ashfeld, Lisa**Project Sponsor(s)**Lenz, Brenda  
Johnson Warner, Susan

**Capture of Attention: Hemispheric Differences**

The objective of this study was to find out if emotional visual stimuli capture attention. Eastwood, Smilek, and Merikle, (2003) found that participants took longer to count arcs when the arcs were part of sad upright faces compared with the faces with positive expression; while inverted faces showed a negligible difference in response latency. Valdes, Foster, Motschke, and Chege (2005) found that irrelevant sad faces interfere more with responding than happy faces because sad faces were harder to ignore. This study replicated Valdes et al. but included hemispherical differences. It has been found that facial perception is done primarily in the right hemisphere of the brain while object (non faces) recognition occurs in the left hemisphere (Goldstein, 2002). Preliminary results suggest that participants are slower to respond to negative stimuli but this effect is consistent across the hemifields. Additional research is in progress.

**Presentation Index:** T5**Time:** 3:00**Department:** Psychology**Student Presenter(s)**

Rutledge, Jordon  
Miles, Vincent  
Olah, Shannon

**Project Sponsor(s)**

Valdes, Leslie

**Effects of Verapamil and EDTA on Pancreatic GnRH Secretion**

Gonadotropin releasing hormone (GnRH) is a major reproductive hormone found primarily in the hypothalamus and also in extrahypothalamic sites, including the pancreas. Whereas previous studies indicated that Calcium is important for the secretion of hypothalamic GnRH secretion, the importance of calcium for pancreatic GnRH secretion is not known. This study was conducted to determine the effect of calcium channels blockers on pancreatic GnRH secretion. Pancreatic fragments were obtained from rats and used to determine the effects of Verapamil, a calcium channel blocker, and Ethylenedinitrio-tetraacetic acid (EDTA), a chelator of calcium. Each fragment was perfused in a Brandel perfusion system as follows: Fragments were exposed to Phosphate-buffered Saline (PBS) containing 95 % O<sub>2</sub> and 5% CO<sub>2</sub> and maintained at 37°C for 120 minutes (Period I). This was followed by another perfusion for 90 minutes with PBS or PBS containing Verapamil (1 millimolar) or EDTA (10 millimolar; Period II) and a final perfusion period (Period III) during which fragments were exposed to 56 millimolar Potassium Chloride (KCl) solution. Perifusates were collected at 10-minute intervals and stored at -80°C until assayed for GnRH by radioimmunoassay. GnRH secretion was pulsatile during Period I in all treatments. At the dose used, neither application of EDTA nor Verapamil significantly affected pancreatic GnRH secretion, although there was a tendency for Verapamil to increase GnRH secretion. Application of KCl to EDTA-treated fragments significantly increased pancreatic GnRH secretion ( $P=.01$ ) but this increase did not reach significance in both PBS- and Verapamil-treated fragments. The inability of Verapamil and EDTA to influence GnRH secretion in this study may relate to the doses of drugs used. Further, depolarization of the pancreatic fragment is shown to be a primary event associated with pancreatic GnRH secretion.

**Presentation Index:** T6**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Carlson, Shawn  
Kirabo, Annet

**Project Sponsor(s)**

Gazal, Oladele

**DNA Sequencing of *Toxoplasma gondii* Genes Using Plasmid Vectors**

*Toxoplasma gondii* is a single celled obligate intracellular parasite, which causes a disease known as Toxoplasmosis. The parasite is found throughout the world, but of most of the people infected with the parasite, most do not show symptoms because the immune system keeps the parasite in check. However, in those individuals who have a compromised immune system (i.e. AIDS patient or a fetus); the parasite can cause serious health problems. Fatal infections principally occur under two circumstances: congenital infection or reactivation of a latent infection during immune dysfunction<sup>1</sup>. The infection can be acquired by accidental swallowing of cat feces by: taking out cat litter and touching your hand to your mouth, eating contaminated raw or undercooked meat, or drinking toxoplasma contaminated water. This research experiment is aimed at taking a *Toxoplasma gondii* cDNA library, and sequencing the unknown genes. Sequencing the unknown genes will allow us to tell if the gene has a known protein function. We can then use the new information to help better understand how the *Toxoplasma gondii* parasite works and functions.

**Presentation Index:** T7**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Hoffmann, Todd

**Project Sponsor(s)**

Kvaal, Christopher

**Interpretation of Terraces and Profile of the Sauk River, a Tributary of the Mississippi**

The Sauk River is a tributary of the Mississippi River. I examined the Sauk River drainage basin in the vicinity of Rockville, Waite Park, and St. Cloud. The Sauk River has a total elevation change of eighty feet. There are two to three main terraces that follow along the Sauk River. The main terraces range from an elevation of about 1,030 feet to 1,120 feet. The drop in elevation on the Sauk River is very gradual near the Mississippi River inlet, but upstream the elevation rises fairly rapidly. The drainage pattern seems much more developed near the town of Rockville compared to the middle of the stream just before Waite Park. This is probably because of the higher elevation of the terraces near Rockville compared to the flat swampy area just before the Waite Park area. The Sauk River displays well-developed meanders near its confluence with the Mississippi. Five significant terraces have been identified on the topographic map. The elevations of the terraces from top to bottom are 1,100 feet, 1,070 feet, 1,060 feet, 1,050 feet and 1,030 feet. The bedrock geology in and around the Sauk River is mostly made up of St. Cloud and Rockville granite, and the depth to bedrock (Stearns County Geologic Atlas) ranges from 50 to 100 feet. The terraces record post-glacial modification of the landscape.

**Presentation Index:** T8**Time:** 3:00**Department:** Earth and Atmospheric Sciences**Student Presenter(s)**

Huls, Ross

**Project Sponsor(s)**

Pound, Kate

**A Limited Climatology of the Capping Inversions in Nocturnal Thunderstorms**

Nocturnal thunderstorms are often forecasted incorrectly: either to far south of where they actually develop, or not forecast to develop at all. This research determines the effects of caps on nocturnal thunderstorms in the following Upper Midwest states: Minnesota, North Dakota, South Dakota, Iowa, Nebraska, and Kansas. A capped event is where there is a temperature inversion (increase in temperature with height) and no convection occurring where it should be. In order to find these caps, or restraining inversions, the main area of focus must be along the frontal boundaries (either to the north of a warm front and/or to the south and/or along a cold front) where convection should be expected. The next step is to determine if there is an actual inversion occurring during the late afternoon/early evening hours. To do this, look at the Skew-T plot from one of the nine radiosonde stations in the states listed above, find any temperature inversion below 600 mb, and note the pressures it is occurring between. These capped events will be noted, and there will be a climatology of the capping events, vs. the non-capping events for the six-year period (June-August of 1998-2003). The next part of the climatology is to study the lid strengths of both types of events. Lid strength is the difference between the potential temperature at the top of the inversion and the surface wet bulb temperature. There is expected to be a correlation of the lid strengths and capping events, as well as lid strengths and non-capping events.

**Presentation Index:** T9**Time:** 3:00**Department:** Earth and Atmospheric Sciences**Student Presenter(s)**

Peterson, James

**Project Sponsor(s)**

Weisman, Robert

**The Use of Cadavers, Dead Animals, and Live Animals in Studying Anatomy**

To what extent do SCSU nursing students in Biology 204, spring 2005 think that the use of animals, cadavers and computer lab simulation is needed to be proficient nurses? A survey was given to Biology 204 (Anatomy and Physiology 2) students in the spring of 2005 to determine their opinions on this question. A sample size of over 100 students was obtained. Opinions on the use of live and dead animals were obtained. Opinions on the effectiveness of computer lab simulations were obtained as well. A mixture of opinion on effectiveness and ethics of use were shown in the results of this survey.

**Presentation Index:** T10**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Ellingson, Chris

**Project Sponsor(s)**

Simpson, Patricia

**Using Headspace-Solid Phase Microextraction-Gas Chromatography to Measure Trihalomethane Concentrations in Drinking Water**

The objective of this research was to explore headspace-solid phase microextraction-gas chromatography (HS-SPME) as a possible method measuring trihalomethane (THMs) concentrations in drinking water. The THMs are disinfection by-products of water chlorination, and concern over their possible carcinogenicity has led to a maximum contaminant level of 0.080 mg/L in drinking water. The method detection limit, precision, and accuracy were measured for the HS-SPME method. Comparison studies were done between HS-SPME and USEPA 502.2. Samples from four different locations in TN, CA and AR were analyzed using both methods. More extensive hourly monitoring studies were conducted in Memphis and in Houston using the same two methods. The results of these studies demonstrated that HS-SPME shows promise as a confirmatory method to be used in conjunction with on-line monitoring methods. HS-SPME is a sensitive, specific, and reproducible method with detection limits in the single  $\mu\text{g/L}$  range, good accuracy and precision.

**Presentation Index:** T11**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**  
Potocek, Meggan**Project Sponsor(s)**  
Jeannot, Michael**Analysis of Flavor Components in Royal Gala and Granny Smith Apples Via Single-Drop Microextraction and Solid-Phase Microextraction**

The objective of this project was to identify and quantitate some of the flavor components of apples via solid-phase microextraction (SPME) and single-drop microextraction (SDME). The two types of apples that were studied were the Royal Gala and Granny Smith apples. A few of the volatile compounds that are expected to be present in apples are esters, aldehydes, ketones, alcohols, and hydrocarbons. The method of SDME has been examined here as a convenient, inexpensive alternative to SPME for this analysis. In SDME, a microdrop of water-immiscible solvent was left suspended on the tip of a conventional microsyringe, immersed in apple juice sample. After sampling for a set period of time the microdrop was retracted into the syringe and transferred into a gas chromatography (GC) system. For SPME, a syringe-like device having an outer septum piercing needle and a plunger that holds a fused silica fiber coated with a stationary phase was used. Once the fiber had absorbed enough of the gas vapors from the sample it was taken out of the sample vial and desorbed into the column of the GC. Qualitative identification of individual components in these two kinds of apples, variation in the types and concentrations of volatile compounds during ripening and calibration curves for quantitation are described. The techniques of SPME and SDME are also compared in terms of procedure, chromatographic analysis, and method performance via analysis of Royal Gala and Granny Smith apples.

**Presentation Index:** T12**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**  
Potocek, Meggan**Project Sponsor(s)**  
Jeannot, Michael

**Pharmacological Effects of *Cimicifuga racemosa* on Rat Uterine Contractility**

The herb *Cimicifuga racemosa* (black cohosh), has a reputation for anti-spasmodic and analgesic properties. Black cohosh has the potential to be used in treatment of premature labor or other gynecologic applications indicating reduction of uterine smooth musculature contractions. The goal was to test the effects of black cohosh on rat uterine contractions and attempt to understand the pharmacological mechanism of such effects. The effects of black cohosh were tested in the presence or absence of oxytocin, a known stimulator of uterine contractions, and of phenylephrine, a known inhibitor of uterine contractions. Virgin rat uterus is weighed and placed in an organ bath to measure contractility of the smooth muscle. The spontaneous uterine contractions were monitored for force and rate. The determined doses of a known inhibitor or stimulator were administered and the effects measured. The dose response to black cohosh is repeated in the presence of the drug with known effects. The shifts in responsiveness are analyzed to determine average force, rate of contractions and then statistically compared. This research would provide additional information in the production of black cohosh pharmaceuticals, leading to more informed regulation of the herb's use. The research may result in the development of new combined drug use for premature labor. Also, the understanding of the mechanisms of action of this extract will have significance for its common usage in treating undesirable menopausal symptoms with fewer side effects.

**Presentation Index:** T13**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Lyon, Catherine

**Project Sponsor(s)**

Tubbiola, Maureen

**Red and White Muscle Fiber Distribution in Two Species of Climbing Hawaiian Freshwater Fishes (*Gobiidae*)**

The stream fishes of the Hawaiian Islands are extraordinary in their ability to climb tall waterfalls (up to 300 m, or 30,000 body lengths) during their juvenile upstream migration from the ocean to freshwater adult habitats. Juvenile climbing gobies employ two drastically different locomotor styles to scale waterfalls. Juvenile *Lentipes concolor* use short and rapid "power bursts" with few continuous locomotor cycles. In contrast, juvenile *Sicyopterus stimpsoni* "inch" up surfaces by alternately attaching their pelvic sucking disk (common to all gobies, including *L. concolor*) and a unique oral sucker to the substrate. It was assumed that muscles essential to climbing style would demonstrate different proportions of red and white fibers. Muscle fiber types were identified using a protocol that demonstrates relative amounts of ATPase activity in frozen sections of tissue. The propulsive tail musculature in *L. concolor* is dominated by white muscle fibers, which is well suited for the fast locomotor burst climbing style of this species. The primarily slow-twitch, slow-fatigue red musculature that predominates in *S. stimpsoni* matches well with the slow, inching locomotor style of this species.

**Presentation Index:** T14**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Plourde, Robert

**Project Sponsor(s)**Schoenfuss, Heiko  
Schrack, Gordon

**Racial Profiling and the St. Cloud Police Department: Statistical Analysis**

This is a study designed to determine whether or not there is concern for racial profiling in St. Cloud Police traffic stops. Visual samples of drivers' race and gender are taken from 8 key sites in the area. This data is then analyzed and compared to actual traffic stop data provided by the St. Cloud Police Department. By comparing traffic violations at the same intersections as our visual observations, it is possible to match distributions and determine, by use of statistical analysis, whether the traffic violation data are significantly different from the visual data. This provides an indication of whether there is potential racial profiling present.

**Presentation Index:** T15**Time:** 3:00**Department:** Statistics and Computer Networking**Student Presenter(s)**

Girtz, Robert  
Donnay, Brent

**Project Sponsor(s)**

Onyiah, Leonard

**Development of a Robust System for PCR Labeling Probes for Northern Blots to Determine the Effect of Ethylation on Transcriptional Recovery in the Yeast *S. Cerevisiae***

Genes repeatedly suffer DNA damage throughout their lifetime. Without proper repair and recovery, transcription in damaged DNA may be permanently altered or cease altogether. In this experiment *S. cerevisiae* cells were exposed to ethylation and the transcriptional recovery of the GAL10 gene observed. Transcription of this gene is induced by the sugar galactose. We measured mRNA levels after subjecting the cells to the ethylating agent ethyl methanesulfonate (EMS) and then exposing the cells to galactose to induce transcription of the GAL10 gene. We used chemiluminescence after gel electrophoresis separation to detect the GAL10 transcripts. The intensities detected were compared between the same time samples in the treated and untreated cells.

**Presentation Index:** T16**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Vlazny, Danielle

**Project Sponsor(s)**

Reagan, Michael

**Cloning and Characterization of Polymorphic Class 3 Aldehyde Dehydrogenase**

Aldehyde dehydrogenases are important as a catalyst in detoxification of certain anticancer drugs, and the detoxification/bioactivation of important aldehydes. Genetic variations found in aldehyde dehydrogenase genes can account for the important differences in the way in which enzymes react with anticancer drugs and other aldehydes. There are currently five known different polymorphisms of Class-3 Aldehyde Dehydrogenase. Two of these polymorphisms (from normal tissue and tumor tissue) have been characterized. The other three polymorphisms which we have acquired are referred to as 361, 362 and 368. The clones have been subcloned into a pET-21 expression vector. The enzymes were expressed and the initial expression was successful. Consistent expression was not attained because the expression proved unstable. Currently the clones are being subcloned into a pET-15b vector by means of PCR amplification followed by subcloning into a TA vector. The aldehyde dehydrogenase gene will then be excised and inserted into the pET-15b expression vector. The successful cloning and expression of polymorphic class-3 Aldehyde Dehydrogenase will be beneficial in understanding how genetic variation plays a role in the catalyzing the detoxification of anti-cancer drugs and other environmentally important aldehydes.

**Presentation Index:** T17**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**

Dillman, Allissa

**Project Sponsor(s)**

Sreerama, Lakshmaiah



**Sauk River Watershed Water Quality Analysis**

The Sauk River is located in Central Minnesota. This river is a source of life for many plant and animal species that occupy the surrounding areas. Pollution of this waterway is becoming a great concern. Run-off from farms and feedlots along with residential and agricultural fertilizers cause the greatest pollution of the river. Pollution control is vital to the well being of the surrounding environment. It is this research group's objective to determine the levels of four different common pollutants; fecal coliform, *E. coli*, phosphorous, and nitrogen. The presence of fecal coliform would conclude that there is an excess of nutrients being released from animal feedlots near the river (MPCA, 2005). There are seventeen different water samples that have been analyzed to conduct this study. These samples were taken from various waterways within the Sauk River watershed.

**Presentation Index:** T18**Time:** 3:00**Department:** Environmental and Technological Studies**Student Presenter(s)**

Hansen, Ashley

**Project Sponsor(s)**

Rose, Charles

**Lawn Turf Response to Soil Amino Sugar Nitrogen Concentration**

Lawn fertilization by homeowners is one of the most common lawn maintenance practices performed, however, few homeowners are aware of the quantity of fertilizer they apply or the environmental consequences of over application. One area of lawn fertility which has not been thoroughly investigated is the response lawn soils have to additional fertilizer inputs. This study has been developed in an attempt to address this issue. Using an adapted corn fertility test, the interactive effects of amino sugar nitrogen and fertilizer rate will be examined. Amino sugar nitrogen is a type of nitrogen stored in the cell walls of soil microorganisms. If amino sugar nitrogen concentration is high within a lawn soil, it is hypothesized that lawn response to additional nitrogen fertilizers inputs will be slight. Further investigation is necessary to test this hypothesis. If found true, lawn fertilization of soils containing high amino sugar nitrogen could result in fertilizer (nutrient) runoff to nearby water bodies.

**Presentation Index:** T19**Time:** 3:00**Department:** Environmental and Technological Studies**Student Presenter(s)**

Storlien, Joseph

**Project Sponsor(s)**

Bender, Mitch

**Assessment of Auditory Skills in Typically Developing Children**

This study assessed the auditory skills of 37 typically developing students at a parochial school in central Minnesota. The students were between the ages of 7 and 12. Each student completed the SCAN-C: A Test of Auditory Processing Disorders-Revised. The classroom teacher completed the Children's Auditory Performance Scale (CHAPS) and a short child case history form for each subject providing additional information about academic performance and social and behavioral characteristics. The study examined how typically developing children perform on the SCAN-C and how teachers interpret auditory skills in typically developing children. The present study also compared these results to the normative data from the SCAN-C and CHAPS. The results showed that all children scored at or above the age-appropriate range on the SCAN-C, however, ten children scored in the "at-risk" range on the CHAPS. Implications of these findings are discussed.

**Presentation Index:** T20**Time:** 3:00**Department:** Fine Arts and Humanities**Student Presenter(s)**

Pairolero, Amber

**Project Sponsor(s)**

Monica Devers

***Toxoplasma gondii* Gene Expression**

*Toxoplasma gondii* is an obligate intercellular protozoan parasite. *Toxoplasma gondii* can infect humans as well as all other warm blooded animals. In humans it can cause toxoplasmosis, blindness, tissue cysts, as well as many other symptoms including death. As a human parasite scientific understanding of its growth and life cycle could lead to new and better treatments for society. *Saccharomyces cerevisiae* (*S. cerevisiae*) are a type of yeast that is often used in biological research. In this experiment *S. cerevisiae* were transformed to contain an inducible vector with *Toxoplasma gondii* cell cycle control genes. These two genes are called TgCYC1 and TgCYC2. These two strains were then grown with and without induction of the gene. The growth of these strains was monitored and recorded by absorbance of light to determine cell density during the complete growth phase. These data were then used to make growth curves that show the effects of TgCYC1 and TgCYC2 on the cell cycle of *S. cerevisiae*. It was found that the induction of TgCYC1 completely halts the cell cycle of infected *S. cerevisiae*. The induction of TgCYC2 does not halt cell division but it does slow the process. By observing how the induction of these genes influence the growth of the infected *S. cerevisiae* knowledge on how and what function these genes play in *Toxoplasma gondii* was obtained.

**Presentation Index:** T21**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Kurtz, Quinn

**Project Sponsor(s)**

Kvaal, Christopher

**Characterization of Aldehyde Dehydrogenase in *Xenopus Laevis* Embryos**

Aldehyde Dehydrogenases (ALDHs) are polymorphic, accordingly they catalyze oxidation of both biogenic and xenobiotic aldehydes. Ethylene glycol ethers produce aldehyde intermediates during their metabolism. *Xenopus* and other aquatic animals are exposed to these ethylene glycol ether aldehydes. The morphogenic changes in *xenopus* development, ALDH expression and role of these ALDHs in oxidation of ethylene glycol ether aldehydes is not known, therefore the purpose of this research project is to profile ALDHs in *xenopus* and their ability to catalyze oxidation of ethylene glycol ether aldehydes thus far we have collected *xenopus* at differing stages of development and ALDH levels are being quantified. After this determination we will expose *xenopus* to various ethylene glycol ethers and study their teratogenic effects.

**Presentation Index:** T22**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**Petersen, David  
Piotrowski, Aaron**Project Sponsor(s)**

Sreerama, Lakshmaiah

**Student Knowledge of Antibiotic Resistance**

Today many forms of bacteria have become resistant to current antibiotics due to both human impacts and natural processes. The purpose of this study was to find out just how much SCSU students knew about the growing problem of antibiotic resistance, as well as, how often they displayed behaviors that encourage the emergence of antibiotic resistant strains of bacteria. To investigate this issue 102 biology 101 students (spring 2005) were surveyed regarding their knowledge and behaviors related to antibiotics and bacterial antibiotic resistance. A large majority (77%) of respondents knew that antibiotics were used to treat bacterial infections, but they did not have a great knowledge of what infections were caused by bacteria. Respondents did not have an adequate knowledge of the human impacts on the natural causes of antibiotic resistance. About half of respondents have displayed behaviors that can create selective pressures for antibiotic resistance by taking antibiotics to prevent an illness (49%) and failing to finish prescriptions (51%). It is not common practice for respondents to take someone else's antibiotics without consulting a physician (only 14%). The results of this study indicate that behaviors that assist in creating selective pressures for bacteria to become resistant to antibiotics could be due to lack of information about bacterial antibiotic resistance. More information about antibiotic use and misuse may be necessary for St. Cloud State students.

**Presentation Index:** T23**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Conroy, Kathryn

**Project Sponsor(s)**

Minger, Mark

Simpson, Patricia

**UV Transmission Through Plastics: Implications in Water Purification**

Ultraviolet light has been used for water disinfection, both in municipal water supply systems, and for household disinfection. UV disinfection method is found to be effective against all pathogens in drinking water including *Cryptosporidium* and *Giardia*. Other common disinfectants like chlorine and ozone are not effective against these pathogens. A common method of disinfection used in developing countries is solar water disinfection. A plastic bottle containing water is exposed to sunlight, where the UV rays of the sun inactivate pathogens in the water. The purpose of this research is to determine the type of plastic with the highest transmittance to UV light. To determine this, a UV spectrophotometer is used. The findings will have implications in water purification, especially at household level, by determining the type of plastic that is most favorable to UV transmittance.

**Presentation Index:** T24**Time:** 3:00**Department:** Environmental and Technological Studies**Student Presenter(s)**

Pradhananga, Amit

**Project Sponsor(s)**

Rose, Charles

**Gasoline Pricing/Renewable Fuels Survey Results**

This study was completed as a part of an undergraduate science education class for prospective teachers. It involves a science, social and technology component that is current in society today. As oil and gasoline prices escalate, this survey points out how college students are influenced by higher gasoline prices for automobiles, and how the average college student feels about renewable automobile fuels.

**Presentation Index:** T25**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Hall, Bruce

**Project Sponsor(s)**

Minger, Mark

**Time of Flight Charge Mobility Measurements in Organic Semiconductors**

In the last decade the interest in using organic crystals and conjugated polymers as semiconductor materials has been increasing. The speed of the charge carriers (electrons or holes) in organic semiconductor films is important to device performance (e.g. transistor switching speed). The charge carrier mobility is defined as how easily the carriers move through the material. An experimental technique used to study these mobilities is referred to as time of flight charge mobility measurements (TOF). In this technique a packet of charge carriers is created near the surface of the sample using a laser pulse of ultraviolet light. The charge carriers then will move across the sample under the influence of an applied electric field. The time it takes for this packet of charge carriers to move across the sample is proportional to the charge carrier mobility. By determining these mobilities we can infer the quality of the organic semiconductor devices. This can lead to improved design and synthesis techniques to enhance the carrier mobilities of these materials. We report the results of ongoing efforts in characterizing the charge carrier mobilities in organic semiconductor materials such as single crystals of tetracene and rubrene using TOF.

**Presentation Index:** T26**Time:** 3:00**Department:** Physics, Astronomy and Engineering Science**Student Presenter(s)**

Pundsack, Thomas  
Smith, Brandon  
Gesmundo, Matthew

**Project Sponsor(s)**

Lidberg, Russell

**Assessing the Effects of Biogenic Silica Binding to 4-nonylphenol in Diatoms**

Biogenically active compounds have been discovered in many surface water samples in Europe and North America. Wastewater effluent is identified as a major source of contamination and found to revert much of the metabolic products of these biologically active compounds back to their original form. This presentation explains methodology for determining the effects of these contaminants through a newly developed bioassay, examining the physiological response of a diatom to these compounds. Diatoms represent an important aspect of the primary production community. They are a desirable food source over other members of the primary production community through storage of photosynthetically produced sugars in the form of lipids rather than starch. Therefore, members of higher trophic levels selectively feed on diatoms when present with other members of the primary production community. This study examines the effects of estradiol and 4-nonylphenol on the physiological development of the diatom species *Melosira varians*. Clearly, unicellular protists such as diatoms are not susceptible to these contaminants in a manner directly analogous to that expressed in vertebrates. However, estradiol is lipophilic making it particularly effective in entering the diatom cell membrane. Comparing cell density, chlorophyll A, and lipid content in control and exposed cultures allowed the development of a dose response to compound concentrations. This diatom was selected because it commonly occurs in most freshwater environments and has been the subject of other toxicological studies. An adequate literature base also exists for evaluating results of this experiment. The species grows rapidly and is easy to maintain in culture. The use of a phytoplankton species as a test organism complements other investigations involving vertebrate models at the apex of the trophic hierarchy by considering effects at the base of the food web.

**Presentation Index:** T27**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Gikineh, Alima

**Project Sponsor(s)**

Julius, Matthew

**Herbal Effects on Rat Trachea**

The goal of the study was to determine if Red Clover does indeed result in a relaxation of rat tracheal smooth muscle. Previous data suggest red clover inhibits smooth muscle contractions in uterus. Information about the generalized relaxation of smooth muscle is important in determining possible medicinal uses for this plant. Historically red clover has been used for whooping cough and other respiratory ailments as well as reproductive complaints. Rat tracheas were isolated and placed in an organ bath. Contractions were induced with either potassium chloride or acetylcholine. Increasing doses of red clover were added to determine its effectiveness in inducing tracheal relaxation.

**Presentation Index:** T28**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Heisick, Kelly

**Project Sponsor(s)**

Tubbiola, Maureen

**Physical Education in Stearns County Schools**

Obesity is an ever-increasing problem in the United States of America. One important method of controlling this problem is through physical activity. Upon recommendation from the Stearns County Public Health Department, we conducted a research study utilizing a quantitative, descriptive design method to explore the status of physical education courses in the public school districts of Stearns County. Using a questionnaire as a measurement tool, we found that only a portion of 7th through 12th graders are meeting the minimum recommendation of time spent in physical education courses set forth by the Centers for Disease Control (CDC). Physical education participation is also not required for junior and senior students, although the CDC guidelines recommend that daily physical education be required for all students, kindergarten through 12th grade. As a result of these findings, we have concluded that the status of physical education in the public school districts of Stearns County may be contributing to the students increased risk of developing chronic diseases and obesity, as well as the decreasing amount of physical activity received as students age.

**Presentation Index:** T29**Time:** 3:00**Department:** Nursing Science**Student Presenter(s)**Kohout, Denise  
Hasbargen, Lisa  
Rudolph, Sarah  
Endres, Stephanie**Project Sponsor(s)**Lenz, Brenda  
Schorn-Rhoda, Mary Ann

**Degenerate Four Wave Mixing Laser Spectroscopy of Organic Materials**

Degenerate Four Wave Mixing (D4WM) is a nonlinear laser spectroscopic technique that offers greater sensitivity than traditional absorption spectroscopy. In this process, two input laser beams from the same source are focused on the sample. The wavelength of the laser is chosen as to correspond to the optical absorption band of the material. Due to the coherent wave nature of the laser light, the beams will interfere with one another and form a dynamic (thermal) grating based on constructive and destructive interference. These interference fringes form a thermal grating in the material that is a result of the analyte absorbing energy in the light regions of the fringes. The incoming laser light is then diffracted off of this grating. The intensity of the diffracted light is proportional to the strength of the grating and thus also to the concentration of the analyte. By monitoring this diffracted light very small changes in the optical absorption spectra can be observed. D4WM can be applied to a wide range of sample types including gaseous, liquid and solid sample matrices. Initial work has focused on organic dyes in order to setup the technique and optimize the conditions. Future work is planned to apply this technique to monitor charge transfer bands in the optical absorbance spectrum of thin films of conjugated polymers. We report the results of ongoing efforts in the setup and application D4WM to the analysis of organic materials.

**Presentation Index:** T30**Time:** 3:00**Department:** Physics, Astronomy and Engineering Science**Student Presenter(s)**Southworth, Steven  
Flint, Aaron**Project Sponsor(s)**Harlander, John  
Lidberg, Russell**Amino Sugar Nitrogen Leachate Study**

In order for the environment to be sustainable, an ecosystem must dispose of waste and recycle the elements in order to replenish the nutrients. When chemical fertilizer is used, the toxic elements must go somewhere; consequently, many times they are carried by water runoff or leaching to waterways. There is virtually no return of nitrogen from water to soil. Therefore, the excess nitrogen in water leads to what is known as eutrophication (or over-fertilization). Something as simple as fertilizing one's lawn can trigger a whole domino effect in which the outcome is a drastic pollution problem.

**Presentation Index:** T31**Time:** 3:00**Department:** Environmental and Technological Studies**Student Presenter(s)**

Maxwell, Kathryn

**Project Sponsor(s)**

Bender, Mitch

**Characterization of Spin Coated Polymer Thin Films**

Understanding the electrical and optical properties of polymeric thin films has been a central undertaking of material scientists. Conjugated polymers are a new class of semiconducting materials that have a variety of uses in electrical, optical, and electro-optical devices. These materials have been studied for applications such as light-emitting diodes, photovoltaics, field effect transistors, batteries, lasers, and chemical sensors. The resulting film properties can be highly dependent upon the specific type of solution used and the thin film preparation conditions. Thin film preparation is often accomplished via a process called spin coating. Spin coating is a process in which a low viscosity solution is deposited over a flat surface rotating at high speeds (> 200 rpm). During the spinning process the solvent evaporates leaving behind a homogeneous thin film of the polymer. This technique has been widely used in research and industrial settings as a means of reproducing thin films with desired chemical and physical properties. The efforts herein address ongoing efforts aimed at optimizing conditions under which thin films of the conjugated polymer, poly(3-octylthiophene) are created. This polymer is important to our current efforts aimed at supporting Time of Flight Charge Mobility Measurements and Degenerate Four Wave mixing projects in our lab. Ongoing methods to characterize the film include ellipsometry, optical absorption and electrical conductivity measurements. We report ongoing efforts at characterizing thin films of poly(3-octylthiophene) under various processing conditions.

**Presentation Index:** T32**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**

Sun, Kyung  
Everaerts, Ken

**Project Sponsor(s)**

Dvorak, Michael  
Lidberg, Russell

**Analytical Matrixes in Matrix-Assisted Laser Desorption/Ionization Mass Spectrometry**

Matrix-assisted laser desorption/ionization (MALDI) mass spectrometry is a mass analysis technique that is used to analyze proteins, oligonucleotides, synthetic polymers, and large inorganic compounds. The analysis of the different compounds takes place by preparing a matrix in which the analyte is embedded. The matrix absorbs energy from the laser shot and causes part of the analyte and matrix to be vaporized. The vaporized analyte is then accelerated into a time-of-flight mass analyzer. There are problems with the most commonly used solid matrixes causing MALDI to be a non-quantitative process. The solid matrixes used are not homogenous, thus the experimental results collected possess a poor shot to shot reproducibility from sample to sample. To address this issue, room temperature ionic liquids (RTILs) are investigated as an alternative to solid, crystalline matrixes. RTILs can be made from traditional solid matrixes by reacting them with bases such as tributylamine. This simple acid-base reaction produces an ionic liquid salt that has important properties desirable for a matrix in MALDI. To test the significance of the ionic liquid (IL) matrixes, an array of ionic liquid spots was created with varied known concentrations of analyte (angiotensin II) and an internal standard (angiotensin I). The results were collected and the correlation between protein concentrations and signal intensities was used to determine the potential for quantification. This process was carried out for two ionic liquids matrixes (IL alpha-cyano-4-hydroxycinnamic acid (CHCA) & IL-sinapinic acid) and their corresponding solid matrixes. The results were compared and it was found that the use of the CHCA ionic liquid produced quality reproducible shot to shot signals. Thus, it was established that CHCA ionic liquid matrixes possess improved quantitative properties.

**Presentation Index:** T33**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**

Riley, Nathaniel

**Project Sponsor(s)**

Jeannot, Michael

**The Effects of Script Training in People with Chronic Aphasia**

The purpose of this study was to examine whether a functionally based intervention model involving script training was beneficial and transferable for persons with aphasia (PWA). This research was conducted in order to address three different questions, 1. can scripts be learned by PWA, 2. is there a difference in the ability of a person to learn a pre-constructed script versus a co-constructed script and 3. does context improve generalization? This study was conducted with three participants with varying degrees of severity of nonfluent aphasia. Each participant learned two scripts, one pre-constructed script and one co-constructed script. In order to examine generalization two scenario questions were created to elicit the scripts. The effect of context on generalization was examined by providing a picture that was representative of one of the scripts. Scripts were learned using auditory cueing and visual cueing in a graphic form. The results revealed progress in script production for all participants however, generalization was only demonstrated by one of the participants. The participants with a more severe apraxia were more inconsistent and required a longer duration of therapy before making progress. The results revealed limited information on the effect of context on generalization due to the fact that only one participant demonstrated generalization. Overall the results contribute to previous data supporting script training as an appropriate intervention for certain aphasia profiles.

**Presentation Index:** T34**Time:** 3:00**Department:** Fine Arts and Humanities**Student Presenter(s)**

Daun, Reesa

**Project Sponsor(s)**

Grama Rangamani

**First Complete Laboratory Demonstration of an All-Reflecting Real Fringe Interferometer**

Spatial Heterodyne Spectroscopy (SHS) is a technique for interference spectroscopy that can offer many advantages for high spectral resolution measurements of faint, diffuse sources. Highly compact and durable SHS interferometers are being developed that can operate in extreme environments such as space and the Earth's upper atmosphere. A new SHS instrument utilizes diffraction gratings and fixed mirrors to relay light sources to a CCD detector. These optical elements induce a path difference that produces fringe patterns caused by constructive and destructive interference of the waves. More specifically, straight line fringes of alternating light/dark bands are created. The spacing between these bands provides information about the wavelength of light while the amplitude of the fringes provides information about the brightness at that wavelength. There are several advantages to this instrument. First, the SHS instrument can be field-widened, which increases the sensitivity of the instrument as much as 100 times. Next, the new design forms real, as opposed to virtual, fringe patterns. Because of this, no lenses are needed to bring the fringes to a focus on the detector. This aids the construction of a smaller and more compact instrument. This project required the alignment of the instrument for a specified wavelength of 632.8 nm – the wavelength of the helium-neon laser. The instrument was tested for frequency and phase behavior as diffuse light from the laser was sent into the instrument at all angles. Once the theoretical behavior was confirmed experimentally, additional light sources were used to verify the workings of the instrument. A neon lamp was chosen because it has three spectral lines in the region of operation for the instrument. By taking flat-field images and performing a Fourier-analysis on the data, the complete analysis validated the instrument operates as theory predicts.

**Presentation Index:** T35**Time:** 3:00**Department:** Physics, Astronomy and Engineering Science**Student Presenter(s)**

Henning, Gregory

**Project Sponsor(s)**

Harlander, John



**What do the Residents of Annandale and Maple Lake Believe in Having a Joint Wastewater Treatment Facility?**

I surveyed residents of the cities of Annandale and Maple Lake, Minnesota to see if they believe that there should be a joint wastewater treatment facility between both cities. The results from my survey found that a majority of the residents of both cities were uninformed about the cities plans to build the facility. The residents were unaware of the cost to build and maintain the facility, the location of the facility, and the environmental impact that the wastewater treatment facility would have on the surrounding area. Through my findings I plan to educate the residents of Annandale and Maple Lake so they are made aware of both sides of the issue about building a joint wastewater treatment facility.

**Presentation Index:** T36**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**  
Nordberg, Nathaniel**Project Sponsor(s)**  
Simpson, Patricia**Analysis of Nutrient Loading and Fecal Coliform Contamination of the Sauk River**

The degradation of water quality due to anthropogenic activity is destroying both recreational and natural values of waterways worldwide. Agriculture is one of the largest causes of this degradation. Fertilizers are often used in excess on agricultural land, and animal wastes are often not managed properly. Both fertilizers and animal wastes contain nutrients which can be carried to nearby waterways during periods of rainfall. This can lead to eutrophication, also known as nutrient pollution. Eutrophication can lead to loss of biodiversity, fish kills, and ultimately a loss of the natural beauty of the affected body of water. Animal wastes also contain harmful bacteria such as fecal coliform and *E.coli*; the latter of which is a direct threat to human health.

From September 2005 through September 2006, a study was conducted to examine the levels of nutrients and coliform bacteria in the Sauk River near St. Cloud. When weather permitted, grab samples were taken from the Sauk River biweekly and after significant rain events. The samples were analyzed in the laboratory for nitrate, phosphate, and ammonia (three nutrients commonly used in agricultural fertilizers). The samples were also analyzed for fecal coliform and *E.coli* contamination. Findings from this study will be used to determine the overall quality of the Sauk River.

**Presentation Index:** T37**Time:** 3:00**Department:** Environmental and Technological Studies**Student Presenter(s)**  
Galzki, Jacob**Project Sponsor(s)**  
Bender, Mitch

**Techniques for Assessing Serotonin Levels in the Central Nervous System: Applications for Neural Prostheses**

Serotonin is a neurotransmitter, and dysfunction in the serotonin system has been linked with myriad clinical conditions including depression, impulsivity, and violent behavior. Although its function has been widely investigated, measuring serotonin levels in the central nervous system in a noninvasive manner is difficult. Currently, two approaches are commonly used. The first approach involves a lumbar tap and a concomitant measurement of a serotonin metabolite, 5-hydroxyindoleacetic acid (5-HIAA). Previous studies demonstrate that the amount of time required to collect cerebral spinal fluid during a lumbar tap affects 5-HIAA levels. The second approach is based on patterns in auditory evoked potentials, specifically the loudness dependence response. An aberrantly pronounced response often is used as a proxy measure of dysfunction in the serotonergic system. In this session, approaches for measuring serotonin levels are compared and contrasted. The issue of measurement is particularly important in cases of medication resistant forms of depression. In such cases, alternative therapies are required to lessen the symptoms associated with chronic depression. The results from this study are being incorporated into a therapeutic regimen based upon neural prostheses. The initial findings suggest that a variant of the auditory evoked potential approach is most consistent with the measurement and cybernetic functions needed for a neural prosthetic.

**Presentation Index:** T38**Time:** 3:00**Department:** Special Education**Student Presenter(s)**

Dreis, Bradley

**Project Sponsor(s)**

Pickle, Michael

**Training Impulse is Lower for Alpine Skiers when Consuming a Carbohydrate-Protein Gel**

Two problems exist for Alpine ski racers: 1.) Ski racers tend not to drink enough during training, and 2.) Ski racers tend not to take in adequate energy substrate. Purpose: To determine if performance can be maintained on successive days of training by ingesting a carbohydrate-protein (CHO-P) gel and water versus water alone. Methods: 14 well trained Alpine skiers (M=22+12 yrs.) trained 5 hr/day for 4 days on the Palmer glacier at Mt. Hood, OR. Subjects were matched by age and ability and assigned to one of two conditions using a counter balanced design where group 1 received gels for days 1 and 2 and group 2 received gels on days 3 and 4. Subjects used a hydration pack consuming 1-1.5 L of water each day. On the two gel days, subjects also consumed at least one, but not more than two CHO-P gels every hour with a range of 4-7 gels/day. Rating of perceived exertion (RPE, CR-10 scale) was recorded at the end of every session. Laps were recorded to determine total vertical distance (m) skied each session. Training impulse (Trimp) was calculated as RPE x Vertical distance x number of laps. Results: Paired T-tests revealed the distance skied was not different for either group ( $p > .05$ ); but, Trimp was found to be significantly lower during the two CHO-P gel days compared to the water only days ( $p < .05$ ). Conclusion: Distance skied is not affected by using a CHO-P gel and water versus water alone; however, perceived effort to ski the same amount is greater when consuming only water.

**Presentation Index:** T39**Time:** 3:00**Department:** Education**Student Presenter(s)**

Harmon, Joe

Burckhard, James

**Project Sponsor(s)**

Dave Bacharach

**Purification and Crystallization of Human Aldehyde Dehydrogenase-1A1 in the Presence of Resveratrol**

Aldehyde Dehydrogenase (ALDH) is an enzyme that can be found in bacteria, plants, fungi, birds, mammals, and other species. It is known to catalyze many reactions in the human body. The objectives of this project are to crystallize aldehyde dehydrogenase - 1A1 (ALDH – 1A1) alone and to crystallize it bound to Resveratrol.

**Presentation Index:** T40**Time:** 3:00**Department:** Chemistry**Student Presenter(s)**

Modi, Rupesh  
Sjogren, Abbey

**Project Sponsor(s)**

Winter, Nathan

**Off the Job Interaction and Work Outcomes**

The relationship between the supervisor and the employee is a complex one, a relationship that extends beyond the workplace door. Many co-workers interact through athletic activities, happy hours and volunteer work in environments that alleviate the stress of some of the workplace 'roles'. We are investigating how extraversion, authoritarianism and the quality of leader-member exchange may impact whether the employees will take part in activities outside of the workplace. A second area of investigation will be if these activities lead to job satisfaction and organizational commitment. We are attempting to obtain a sample of 150 full-time workers from a variety of work environments with the intention of examining relationships between the variables mentioned above. It is expected that a person's level of extraversion and authoritarianism, as well as the quality of leader-member exchange will impact the quantity and quality of off-the-job interactions. In turn, this will increase the level of job satisfaction and organizational commitment. The implications of our findings will also be discussed.

**Presentation Index:** T41**Time:** 3:00**Department:** Psychology**Student Presenter(s)**

Rajhkowa, Rupsmitta  
Vraa, Josh  
Stambaugh, Morgan  
Fetterman, Adam  
Priebe, Matthew

**Project Sponsor(s)**

Protolipac, Daren

**Wireless Sensor Network**

There are many situations where we need to collect environment data like temperature, humidity, light intensity, etc. Wireless sensor network is a data network for battery powered sensor system. Each individual sensor node is capable of measuring and transmitting data to user through the wireless network they established. There are several key factors need to be considered when designing data communication protocol of the wireless sensor network, such as multiple access, the serviceable time. Multiple access interference occurs when multiple sensors try to connect to the data collector at the same time. Serviceable time decrease when sensors are communicating inefficiently to each other. In this project, we propose a data communication protocol that can minimize the effect of multiple access interference, improve power efficiency and enhance coverage of the wireless sensor network. Our design involves the use of Time Division Multiplex Access (TDMA), data relay by sensor nodes and query pipelining.

**Presentation Index:** T42**Time:** 3:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**

Singh, Sushil  
Lei, Peng

**Project Sponsor(s)**

Yao, Aiping

**Control of Music on Job Satisfaction and Productivity**

Job satisfaction has been a main research area in industrial and organizational psychology. Music has been shown to increase productivity (Fox, & Embrey, 1972). Personal control increases productivity and satisfaction (Greenberger, Strasser, Cummings, & Dunham, 1989). People who are satisfied with their job are more productive and have fewer turnover intentions (Oldham, Cummings, Mischel, & Schmidtke, 1995). Claessens, Van Eerde, Rutte, & Roe, (2004) suggested planning behavior leads to more control and therefore less strain, more satisfaction, and feeling more productive. Theorell, (2003) also suggested exerting control over one's life increases coping with stress. It was hypothesized that having control over one's music would improve their job satisfaction and performance. Participants sorted Team Course Maintenance Forms by alphabetical order of the instructor and by meetings days and times, and then they took a survey measuring their satisfaction with their job and listening preferences. The results did not support the hypothesis that control over one's own background music increases job performance. Yet it mildly supported the hypothesis that music effects job satisfaction. This implies that jobs can be made more satisfying by allowing employees to listen to music.

**Presentation Index:** T43**Time:** 3:00**Department:** Psychology**Student Presenter(s)**

Bauer, Adam

**Project Sponsor(s)**

Valdes, Leslie

**Surveillance Eye**

The goal of the project is to design a device that can be used by law enforcement personnel for automating surveillance tasks. Currently, in order to conduct surveillance, personnel have to keep an eye on the target for the entire time period the surveillance is being conducted. This can result in fatigue or frustration. This method is also prone to slip ups. For example, when surveillance personnel take their eyes off the target, the surveillance is off too. Our design is aimed to provide a solution to the above mentioned problems and, specifically, with surveillance on the arrival and departure of individuals at a residence. The device will be capable of detecting the opening of a door, overhead garage or the passing of a person across a specific path for up to 100 feet. The unit will alert the user by LED as well as an audible sound. Once any activity is detected, a camcorder is activated. The surveillance eye device will be funded by Mr. Robert Foley and is to be created according to his specific requirements and constraints.

**Presentation Index:** T44**Time:** 3:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**

Labyed, Yassin

Qureshi, Umer

Gabel, Craig

**Project Sponsor(s)**

Hou, Ling

**Group Collection for a Wireless Sensor Network**

There exists a need to collect and analyze environmental data where the use of wired communication is limited or not present. To accomplish this task a wireless system is in order that will reliably collect and transmit the correct information from the environment to a base station. The main focus is on the design of the communication system where a base station, substation, and sensor nodes make up the physical network. The communication system consists of an addressable network where only one substation is addressed from the base station and each activated substation can only access one sensor node at a time. This approach is similar to that of a TDMA system except that this new system is relatively easy to implement since there is no need to setup synchronization between sensor nodes and substations along with this the new system virtually eliminates multiple access interference.

**Presentation Index:** T45**Time:** 3:00**Department:** Electrical and Computer Engineering**Student Presenter(s)**

Tu, Liang  
Nunn, Robert

**Project Sponsor(s)**

Yao, Aiping

**The Management of Urban Deer in St. Cloud, MN**

With the abundant whitetail deer population in the City of St. Cloud there has been discussion of the development of a scheduled deer hunt proposed for the city of St. Cloud. This issue is still under investigation. I would like to determine the best site locations that would be open for this hunt. Considerations would include and are not limited to the remoteness of an area, the amount of suitable deer habitat, the local deer population, and land ownership. The study will begin with a review and comparison of the lands contained within the city boundary with aerial photographs, determination of suitability from the aerial photos, and finally site visits to verify data quality and to produce secondary data. The data collected will include among others; food sources, areas of cover, and visual signs of the local deer population that would be used for comparison and also in the determination of the sites suitability for a controlled hunt that could benefit the local deer herd and the residents of St. Cloud.

**Presentation Index:** T46**Time:** 3:00**Department:** Geography**Student Presenter(s)**

Klande, Derek

**Project Sponsor(s)**

John, Gareth

**Community Watershed Quality: A Community Updated Consistently**

Your local water shed and ground water quality is controlled by how well society takes care of there land. Ground water and watershed areas were not looked at as much of anything except for guidelines to where different counties began and ended, and perhaps a place to through garbage away. Homes, farms, ranches, forests, small towns, big cities and more can make up watersheds. Some cross county, state, and even international borders. Watersheds come in all shapes and sizes. Some are millions of square miles; others are just a few acres. Just as creeks drain into rivers, watersheds are nearly always part of a larger watershed. Today with the increased use of pesticides and the changing topography due to urbanization, ground water and water shed areas have become more polluted than ever before. This pollution is most commonly due to fertilizers, pesticides, nutrients like phosphates and nitrates, toxic chemicals, oil, gas, and bacteria. There are some possible areas where this pollution occurs. The problem is that both animals and the human population has been hurt or affected by poor water quality. There have been a number of animal and people that have died or fallen ill due to poor water quality. At the current rate of land use it is very possible to increase the damage of ground water/drinking water, and watershed areas. With out the knowledge of knowing whether or not the pond, river, or well by you is safe the risk of a pet or human becoming sick and possibly dieing increases. An investigation by Robert Morris of the Medical College of Wisconsin and Ronnie Levin of the U.S. Environmental Protection Agency (EPA) concluded that about 7.1 million Americans suffer nausea or diarrhea each year from bad water. The inquiry suggested that as many as 1,200 die as a result. The most recent EPA report suggests about 230,000 people get sick each year from contaminated drinking water, with about 50 deaths.

**Presentation Index:** T47**Time:** 3:00**Department:** Biological Sciences**Student Presenter(s)**

Tipler, Lindsey

**Project Sponsor(s)**

Minger, Mark

**Native American Frybread: Commodity Forced Upon Culture**

This research project has examined the aspects of colonization and subjugation that government commodities, specifically fry bread and its ingredients, have played in American Indian reservation communities. A great deal of emphasis will be placed on the historical role of commodity goods and the emphasis jettisoned down from the powers that be. Focus will also be placed on the health effects that run rampant in American Indian communities, directly linked to the government intervention policies of commodities. Research will be conducted from published works, articles, journals, and an ethnographic interview which will be conducted with a credible individual who is knowledgeable about the topic from both an academic or personal perspective. This matter has been developed from a well-rounded sociological viewpoint and culmination of research in St. Cloud State University's Sociology captone course. The aspect of commodity goods is a form of colonization that remains very much overlooked by many.

**Presentation Index:** T48**Time:** 3:00**Department:** Sociology and Anthropology**Student Presenter**

Robert Rosten

**Faculty Sponsor (s)**

Tracy Ore

**Group Work and ESL Students- Peer Reviews and their Effectiveness in Writing**

In an American writing class, it is necessary to consider the importance of peer or group work where student writings are concerned. Peer reviewing in the process of writing is prominent in both English as a first language and second language settings. Studies have shown that English Language Learners (ELL) prefer teacher's comments over those of fellow students due to cultural backgrounds and differences (Carson). Therefore, preparing ELL students for American classrooms should consist of teachers guiding them in the right direction while observing any patterns that may exist. Peer response groups are groups of students within a classroom who help each other through the composing process especially with revision of drafts. The main aim of having such groups is to ensure effective feedback from multiple audience and accordingly improvement of revisions on the writer's part. Over the course of a semester, ELL students in a college writing class are given several essays to work on individually. Each essay goes through the processes of rough draft and revision before the final paper is produced. Once each student produces a rough draft, they work in pairs to provide peer feedback based on specific questions. After providing feedback, the students revise their drafts making the necessary changes suggested by the peers. Once again, the pairs work together to go through the revisions and further suggestions. This draft is then handed to the teacher who provides feedback. Thereafter, students work on the final paper based on both peer and teacher feedback on which they are ultimately graded. This study examines the process of peer feedback of ELL students and verifies if it has an impact on the revisions of the writer. It also checks if this kind of feedback changes over a given period of time and if there is any improvement in the quality of student essays.

**Presentation Index:** U1**Time:** 5:00**Department:** English**Student Presenter(s)**

Bhutia, Choden

**Project Sponsor(s)**

Robinson, James H

**Using Trickster Game Theory to Explain Horizontal Writing Styles: How to Dialogue with Monologue**

Modern scholars have generated numerous writing styles, some more vertical/monological and others more horizontal/dialogical. Using Gerald Vizenor's postmodern Girardian game theory and 120+ texts (1549-present), I describe how these styles have emerged together. Vizenor's extreme horizontality reveals why dialogical as well as monological styles should be taught in ELL classrooms.

**Presentation Index:** U2**Time:** 5:20**Department:** English**Student Presenter(s)**

Fonken, Gael

**Project Sponsor(s)**

Teutsch-Dwyer, Marya

**An Analysis of Social Identity Among University-Bound English Language Learners**

Research has shown that English language learners not only learn English in the classroom, but they also learn English and culture outside of the classroom. In recent years the applied linguistics community has more deeply investigated the contextual factors that influence language learners to acquire language and aspects of culture. The conditions in which language learners find themselves will oftentimes impact what and where they learn. One's 'identity' will change and transform depending on both internal and external contexts. The concept of 'identity' is fluid, complex, and changing. In an effort to better understand the ways in which a language learner's 'identity' changes and transforms, I investigated eight university-bound English language learners. Study participants took part in a weekly dialogue journal for thirteen weeks. Since interacting with the target language and culture can be an intimidating, but necessary, experience for language learners, these participants were encouraged to interact with the target (i.e.; American) culture. Study participants then documented these language and/or cultural learning opportunities in the dialogue journal. The journal was a dialogue between the participant and me; this allowed me to question and/or comment in an effort to better ascertain the emotions and learning experiences the participants took part in outside of the classroom. The dialogue also served as a means to continue encouraging participants to take risks with the learning of language and culture. Study participants also completed three surveys in which they documented such things as how much they miss their home country, and how often they speak their native language versus English. Future data analysis will involve looking for trends and patterns with regard to identity transformation, and how those patterns reflect factors such as how often they interact with the target language and culture.

**Presentation Index:** U3**Time:** 5:40**Department:** English**Student Presenter(s)**

Rosenow, Lisa

**Project Sponsor(s)**

Teutsch-Dwyer, Marya

**Tutoring Methodology: Who Holds the Power?**

If we agree that writing center tutors can help students at all skill levels and in all stages of writing and that one-on-one tutoring is valuable to students because of personalized attention, then why do sessions sometimes work and sometimes not work? Are there other variables that need to be considered in the equation of one student plus one tutor equaling success? We sought to help answer this very question through an ethnographic study we conducted during the Fall '05 term. The tutoring variable we considered was directive vs. non-directive tutoring methodology. The presentation of our study results will be followed by an analysis of result meanings. We will then be available to address audience questions and comments.

**Presentation Index:** U4**Time:** 6:00**Department:** English**Student Presenter(s)**

Timp-Pilon, Michele

Slee, Heather

**Project Sponsor(s)**

Mohrbacher, Carol



**Liberal Abortion Laws; a Pull Factor for Mexican Immigration to the U.S.?**

In 1970 there were a total of 200,000 Mexican workers in the entire U.S. By 2006 there are an estimated 10 million illegal Mexican immigrants alone. What's causing this phenomenon? It could be something that happened in 1973. Since the landmark Supreme Court Case Roe v Wade was decided, the US fertility rate permanently declined. Our economic growth, however, has remained fairly steady. The initial impact of liberal abortion laws increased the labor pool as women worked longer and had fewer children. The intergenerational effect on the labor pool should be just the opposite, with a lag of about 18 years. As the cohorts of the missing children become working age, their numbers are fewer in proportion to the economic growth. Businesses need workers to fill these jobs. My paper will try to determine whether this worker vacuum is being filled by Mexicans who would prefer to work in the U.S. for higher wages than is currently possible in Mexico.

**Presentation Index:** V1**Time:** 5:00**Department:** Economics**Student Presenter(s)**

McConnell, Timothy

**Project Sponsor(s)**

Lo, Ming

**The "Coalition of the Willing" Supporting the War in Iraq: Factors Influencing a Country to Join**

The war in Iraq has been very controversial. The decision on whether or not to invade Iraq has been challenged by many scholars and political figures around the world. In support of George Bush's declaration for war, a "coalition of the willing" was formed. This coalition consisted of many different countries from around the world. A logit model can be used to determine whether or not a country is likely to join the coalition depending on different factors. These factors include GDP per capita, religion, government and exports/imports to and from the United States.

**Presentation Index:** V2**Time:** 5:20**Department:** Economics**Student Presenter(s)**

Dennie, Kimberly

**Project Sponsor(s)**

Lo, Ming

**U.S. Trade Deficit With China: Whose Fault Is It Anyway?**

Trade deficits, whether a genuine problem or not, almost always catch political attention. A trade deficit with a potential future political, economic and even military rival like China almost always catches fire in the Capitol Hill. The current trend of the U.S. budget deficits has been a source of disappointment to many fiscal conservatives. Regardless of their true belief, the foes of the administration easily target this appeared weakness of the White House which once vowed for reducing the size of the federal government. Once they connect the dots between fiscal and trade deficits, the problem suddenly doubles. The tactic of the defenders of the administration is traditional and conventional: policies of foreign governments are responsible for our problem. That said, it is an interesting and important empirical question to ask which policy-U.S. deficit spending or China's fixing exchange rates-contributes more to the status of the U.S. trade deficit with China. We address the aforementioned issues using a bivariate vector autoregressive (VAR) model with exogenous structural breaks. Although the model imposes little theoretical structure, it is simple and intuitive; more importantly, the empirical results are revealing.

**Presentation Index:** V3**Time:** 5:40**Department:** Economics**Student Presenter(s)**

Lugovskyy, Oleksandr

**Project Sponsor(s)**

Lo, Ming

**A Generalized Forced Quantitative Randomized Response Model**

In the present investigation, a generalized forced quantitative randomized response (GFQRR) model for estimating the population total of a sensitive quantitative variable is proposed. The properties of the proposed estimator of the population total are studied under a unified approach. The models due to Eichhorn and Hayre (1983), Bar-Lev, Bobovitch, Boukai (2004), Liu and Chow (1976a, 1976b), Stem and Steinhorst (1984) and Gjestvang and Singh (2005) are shown as special cases of the proposed GFQRR model. The performance of the proposed GFQRR model has been demonstrated with numerical illustrations.

**Presentation Index:** W1**Time:** 5:00**Department:** Statistics and Computer Networking**Student Presenter(s)**

Odumade, Oluseun

**Project Sponsor(s)**

Singh, Sarjinder

**Alexandria Extrusion Xpress Redesign Project**

Alexandria Extrusion Company (A.E.C.), located in Alexandria, Minnesota, manufactures precision aluminum extruded products marketed to companies in a variety of industries. Their services extend to customers in markets such as electronics, medical equipment, power tools, telecommunications, and transportation. The 150,000 square foot production floor contains three Xpress Machine stations used to process various linear aluminum extrusions. The capabilities of the Xpress Machines include drilling, tapping, counterboring, punching, and sawing. The purpose of the Xpress machine redesign project is to improve the efficiency of the five processing stations by reducing setup time via a new mechanical and control design scheme, as well as to reducing associated costs. The deliverable is a redesigned Xpress machine with new tool positioning mechanisms, and improved control hardware and software. The best method to reduce setup time is to modify the tooling stations to make them mobile along the direction of the extrusion. This change will also require a software upgrade which provides the opportunity to replace the control hardware with newer, smaller, and more accurate products. The new control software should also allow a more user-friendly interface to interact with.

**Presentation Index:** W2**Time:** 5:20**Department:** Mechanical and Manufacturing Engineering**Student Presenter(s)**

Oerter, Dominic

**Project Sponsor(s)**

Covey, Steve

Robert, Marshall

**Piper Sanctum Natural Product Synthesis**

Natural products isolated from *Piper sanctum* have been a subject of study in antimycobacterial activity. This work attempts to synthesize one of these natural products displaying activity against *Mycobacterium tuberculosis*. The goal of this research is to create a sequence of reactions which can be developed into an undergraduate organic laboratory. This molecule is a good target for synthesis because it can be synthesized using cheap, fast, and clean reactions, which are ideal for use in an undergraduate laboratory setting.

**Presentation Index:** W3**Time:** 5:40**Department:** Chemistry**Student Presenter(s)**

Terry, Jay

**Project Sponsor(s)**

Mechelke, Mark

**Neurotransmitter Effects on Hypothalamic and Pancreatic GnRH Secretion**

The pancreas is an extrahypothalamic source of gonadotropin releasing hormone (GnRH) secretion in a variety of mammals. The function of this hormone in the pancreas is not well known. Furthermore, some previous results indicate that pancreatic exocrine cells may be the site of its secretion. Although the role of various neurotransmitters in the regulation of hypothalamic GnRH secretion is well known, it is not clear how the synthesis and secretion of pancreatic GnRH are regulated. Glutamate acting through N-Methyl, D,L-aspartic acid (NMDA) receptors and Gamma-aminobutyric acid (GABA) are the most important excitatory and inhibitory neurotransmitters in the central nervous system and have been implicated in the regulation of hypothalamic GnRH secretion. We investigated their role in this study. Pancreatic fragments (approximately 100 mg per fragment) were obtained from female rats and perfused in a Brandel Perfusion System using Krebs-Ringer Buffer (KRB), bubbled with 95% oxygen and 5% carbon dioxide and maintained at 37 °C. Perfusion consisted of four stages: a 30-minute equilibration, a 120-minute perfusion with KRB, a 90-minute perfusion with 150 millimolar N-Methyl, D,L-aspartic acid (NMA) in KRB or 3 millimolar GABA in KRB and a 30-minute perfusion with 60 millimolar KCl in KRB. Samples were collected at 10-minute intervals, stored at -80 °C and later assayed for GnRH levels using radioimmunoassay (RIA). Baseline GnRH concentrations for the NMA treatment was  $14 \pm 1.5$  pg/mL. Application of NMA significantly increased GnRH concentration to  $162 \pm 34.4$  pg/mL. Addition of KCl did not cause any further increase in GnRH (mean =  $90 \pm 28.5$  pg/mL). Application of GABA had no significant effect ( $P > .05$ ) on GnRH secretion. These results suggest that similarities exist in the role of glutamate regulation of GnRH secretion between the hypothalamus and the pancreas. However, the much reported inhibitory effect of GABA on GnRH secretion was not evident at the dose of GABA used in the current study.

**Presentation Index:** W4**Time:** 6:00**Department:** Biological Sciences**Student Presenter(s)**

Wong, Wai

**Project Sponsor(s)**

Gazal, Oladele

# Student Presenter Index

Student Presenter	Session	Presentation Index	Time	Room
Achman, Amber	All Disciplines	A5	9:00	Ballroom
Allen, Angela	Biological Studies	O4	3:00	North Glacier
Allen, Seth	Behavioral Studies	M2	11:20	Mississippi
Amundson Cissé, Adelle	Linguistics and Humanities	F1	9:00	South Voyageurs
Anissa, Kelly	Geography	L5	12:00	Lady Slipper
Arickx, Sara	All Disciplines	A36	9:00	Ballroom
Ashfeld, Lisa	All Disciplines	T4	3:00	Ballroom
Autio, Cheryl	All Disciplines	A8	9:00	Ballroom
Balk, Rachel	All Disciplines	A44	9:00	Ballroom
Ballengee, Mary	Social Sciences	J2	11:20	North Voyageurs
Barthel, David	All Disciplines	A45	9:00	Ballroom
Barthel, David	All Disciplines	A45	9:00	Ballroom
Bauer, Adam	All Disciplines	T43	3:00	Ballroom
Besserra, John	All Disciplines	T4	3:00	Ballroom
Bevis, Cheryl	All Disciplines	A20	9:00	Ballroom
Bhutia, Choden	Teaching English as a Second Language	U1	5:00	North Glacier
Bistodeau, Jessica	All Disciplines	A20	9:00	Ballroom
Braulick, Justin	All Disciplines	A17	9:00	Ballroom
Brom, Alison	All Disciplines	A44	9:00	Ballroom
Bromelkamp, Matt	St. Cloud State University Survey	S1	2:00	Mississippi
Brost, Melissa	All Disciplines	A14	9:00	Ballroom
Burckhard, James	All Disciplines	T39	3:00	Ballroom
Bushkofsky, Justin	All Disciplines	A28	9:00	Ballroom
Carlson, Shawn	All Disciplines	T6	3:00	Ballroom
Carlson, Stacey	All Disciplines	A20	9:00	Ballroom
Cediel, Roberto	Science and Engineering	B5	10:20	Glacier North
Chad, Miller	Geography	P3	2:30	Lady Slipper
Chand, Smriti	Geography	P5	3:00	Lady Slipper
Chesborough, Sarah	Behavioral Studies	E3	9:40	North Voyageurs
Chowdhury, Zinat	All Disciplines	A41	9:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Christian, Curt	All Disciplines	T2	3:00	Ballroom
Christoffer, Heather	All Disciplines	A34	9:00	Ballroom
Christoffer, Holly	All Disciplines	A8	9:00	Ballroom
Conroy, Kathryn	All Disciplines	T23	3:00	Ballroom
Curtin, Michael	Natural Sciences	G2	9:20	Oak
Daun, Reesa	All Disciplines	T34	3:00	Ballroom
Dawson, Charlie	Transportation	D1	9:00	Granite
Dehmer, Kevin	All Disciplines	A29	9:00	Ballroom
Denne, Jessica	Geography	P6	3:15	Lady Slipper
Dennie, Kimberly	Economics	V2	5:20	South Glacier
Deters, Travis	Economics	K2	11:20	South Voyageurs
Dillman, Allissa	All Disciplines	T17	3:00	Ballroom
Dircks, April	All Disciplines	A47	9:00	Ballroom
Donnay, Brent	All Disciplines	T15	3:00	Ballroom
Dreis, Bradley	All Disciplines	T38	3:00	Ballroom
Du Lac, Shawn	Transportation	D3	9:40	Granite
Dunkel, Anthony	All Disciplines	A26	9:00	Ballroom
Dwyer, Cecelia	Social Sciences	J1	11:00	North Voyageurs
Edelbrock, Heidi	All Disciplines	A34	9:00	Ballroom
Egan, Lindsey	Spanish	C2	9:20	Glacier South
Ehlinger, Tim	St. Cloud State University Survey	S1	2:00	Mississippi
Eisterhold, Joe	All Disciplines	A30	9:00	Ballroom
Ellingson, Chris	All Disciplines	T10	3:00	Ballroom
Elmeski, Mohammed	Linguistics and Humanities	F2	9:20	South Voyageurs
Endres, Stephanie	All Disciplines	T29	3:00	Ballroom
Euteneuer, Kari	All Disciplines	A8	9:00	Ballroom
Everaerts, Ken	All Disciplines	T32	3:00	Ballroom
Fetterman, Adam	All Disciplines	T41	3:00	Ballroom
Fiedler, Emily	All Disciplines	A14	9:00	Ballroom
Flint, Aaron	All Disciplines	T30	3:00	Ballroom
Floersheim, Will	St. Cloud State University Survey	S1	2:00	Mississippi

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Fonken, Gael	Teaching English as a Second Language	U2	5:20	North Glacier
Forseth, Mallory	Spanish	C1	9:00	Glacier South
Forsman-Earl, Cynthia	All Disciplines	A31	9:00	Ballroom
Fowler, Denise	All Disciplines	A10	9:00	Ballroom
Frost, Marisa	All Disciplines	A8	9:00	Ballroom
Gabel, Craig	All Disciplines	T44	3:00	Ballroom
Gahlon, Hailey	All Disciplines	A27	9:00	Ballroom
Galzki, Jacob	All Disciplines	T37	3:00	Ballroom
Gesmundo, Matthew	All Disciplines	T26	3:00	Ballroom
Ghose, Shourjo	Biochemistry	H3	11:40	North Glacier
Gikineh, Alima	All Disciplines	T27	3:00	Ballroom
Girtz, Robert	All Disciplines	T15	3:00	Ballroom
Glynn, Alexandra	Fine Arts and Humanities	I1	11:00	South Glacier
Grant, Rainer	All Disciplines	A9	9:00	Ballroom
Grieme, Laura	All Disciplines	A20	9:00	Ballroom
Gross, Aaron	Biochemistry	H2	11:20	North Glacier
Grove, Kent	Science and Engineering	R3	2:40	Granite
Hall, Bruce	All Disciplines	T25	3:00	Ballroom
Hansen, Ashley	All Disciplines	T18	3:00	Ballroom
Hanson, Erin	All Disciplines	A19	9:00	Ballroom
Harmon, Joe	All Disciplines	T39	3:00	Ballroom
Harris, Daniel	Science and Engineering	B3	9:40	Glacier North
Hasbargen, Lisa	All Disciplines	T29	3:00	Ballroom
Heisick, Kelly	All Disciplines	T28	3:00	Ballroom
Henning, Gregory	All Disciplines	T35	3:00	Ballroom
Henry, Elizabeth	All Disciplines	A2	9:00	Ballroom
Herold, Wesley	All Disciplines	A1	9:00	Ballroom
Herring, Lindsey	All Disciplines	A34	9:00	Ballroom
Hessler, Franklin	Geography	P1	2:00	Lady Slipper
Hill, Jennifer	All Disciplines	A6	9:00	Ballroom
Hjelm, Adam	All Disciplines	A21	9:00	Ballroom
Hoffmann, Todd	All Disciplines	T7	3:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Holper, Brenton	Geography	P2	2:15	Lady Slipper
Holtz, Angela	All Disciplines	A20	9:00	Ballroom
Honeck, Jason	All Disciplines	A47	9:00	Ballroom
Huls, Ross	All Disciplines	T8	3:00	Ballroom
Humbert, Crystal	All Disciplines	A8	9:00	Ballroom
Huynh, An	All Disciplines	A34	9:00	Ballroom
Jacobson, Brooke	All Disciplines	A37	9:00	Ballroom
Jessen, Jen	All Disciplines	T4	3:00	Ballroom
Johnson, Kari	All Disciplines	A20	9:00	Ballroom
Johnson, Mary	All Disciplines	A3	9:00	Ballroom
Johnston, Justin	Transportation	D1	9:00	Granite
Jones, William	All Disciplines	A24	9:00	Ballroom
Juma, Peter	Behavioral Studies	E2	9:20	North Voyageurs
Khadka, Siddarth	Geography	P4	2:45	Lady Slipper
Kiffmeyer, Shannon	All Disciplines	A36	9:00	Ballroom
Kirabo, Annet	All Disciplines	T3	3:00	Ballroom
		T6	3:00	Ballroom
Kirsch, Jamie	Linguistics and Humanities	F4	10:20	South Voyageurs
Klande, Derek	All Disciplines	T46	3:00	Ballroom
Knepper, Sarah	Science and Engineering	B2	9:20	Glacier North
Koch, Jason	Natural Sciences	G1	9:00	Oak
Kohout, Denise	All Disciplines	T29	3:00	Ballroom
Kok, Kris	All Disciplines	A8	9:00	Ballroom
Kolt, Lysianne	All Disciplines	A33	9:00	Ballroom
Kortan, Cristin	All Disciplines	A14	9:00	Ballroom
Kraetsch, Cassie	All Disciplines	A46	9:00	Ballroom
Krause, Laura	All Disciplines	A20	9:00	Ballroom
Krekelberg, Elizabeth	Science and Engineering	R2	2:20	Granite
Kronland, William	Biological Studies	O2	2:20	North Glacier
Kummer, Elizabeth	All Disciplines	A39	9:00	Ballroom
Kurtz, Quinn	All Disciplines	T21	3:00	Ballroom
Labyed, Yassin	All Disciplines	T44	3:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Lahr, Angeline	All Disciplines	A10	9:00	Ballroom
Lamo-Nelson, Teresa	Behavioral Studies	M1	11:00	Mississippi
Lei, Peng	All Disciplines	T42	3:00	Ballroom
Lentz, Katharine	All Disciplines	A38	9:00	Ballroom
Lesniak, William	Transportation	D4	10:00	Granite
Loes, Tim	Biological Studies	O4	3:00	North Glacier
Lohrman, Sara	St. Cloud State University Survey	S1	2:00	Mississippi
Lugovskyy, Oleksandr	Economics	K1 V3	11:00 5:40	South Voyageurs South Glacier
Lundorff, Kevin	Transportation	D4	10:00	Granite
Lyon, Catherine	All Disciplines	T13	3:00	Ballroom
Marine, Sasha	Biochemistry	H4	12:00	North Glacier
Maxwell, Kathryn	All Disciplines	T31	3:00	Ballroom
Mayers, Angela	All Disciplines	A14	9:00	Ballroom
McCarron, Charlie	Fine Arts and Humanities	I3	11:40	South Glacier
McCarthy, Clara	Biological Studies	O3	2:40	North Glacier
McConnell, Timothy	Economics	V1	5:00	South Glacier
Meemken, Amanda	All Disciplines	A24	9:00	Ballroom
Mehr, Angela	All Disciplines	A10	9:00	Ballroom
Metzker, Amber	All Disciplines	A13	9:00	Ballroom
Meyer, Holly	All Disciplines	A22	9:00	Ballroom
Miles, Vincent	All Disciplines	T5	3:00	Ballroom
Miskanis, Sarah	All Disciplines	A17	9:00	Ballroom
Modi, Rupesh	All Disciplines	T40	3:00	Ballroom
Mondloch, Joseph	All Disciplines	A42	9:00	Ballroom
Mulliner, Kristi	All Disciplines	A10	9:00	Ballroom
Murphy, Angela	Behavioral Studies	M3	11:40	Mississippi
Mymryk, Karlie	All Disciplines	A20	9:00	Ballroom
Neddermeyer, Andrew	All Disciplines	A1	9:00	Ballroom
Neff, Kathrine	All Disciplines	A14	9:00	Ballroom
Nelsen, Eric	All Disciplines	A19	9:00	Ballroom
Nelson, Quinn	Spanish	C3	9:40	Glacier South
Neznik, Bradley	All Disciplines	A35	9:00	Ballroom



<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Niemuth, Kasey	Science and Engineering	R4	3:00	Granite
Nordberg, Nathaniel	All Disciplines	T36	3:00	Ballroom
Nordby, Mark	Science and Engineering	B1	9:00	Glacier North
Normand, Kevin	All Disciplines	A7	9:00	Ballroom
Nunn, Robert	All Disciplines	T45	3:00	Ballroom
Obermoller, Jonathan	Geography	L3	11:30	Lady Slipper
Odumade, Oluseun	Science and Engineering	W1	5:00	Lady Slipper
Oerter, Dominic	Science and Engineering	W2	5:20	Lady Slipper
Olah, Shannon	All Disciplines	T5	3:00	Ballroom
Olson, Kari	All Disciplines	T4	3:00	Ballroom
Olson, Matt	Transportation	D4	10:00	Granite
Olson, Paul	All Disciplines	A20	9:00	Ballroom
Ouke, Nicole	All Disciplines	T4	3:00	Ballroom
Pairolero, Amber	All Disciplines	T20	3:00	Ballroom
Pallesen, Terry	All Disciplines	A15	9:00	Ballroom
Peichel, Steve	Science and Engineering	B4	10:00	Glacier North
Peinovich, Brooke	Spanish	C4	10:00	Glacier South
Penniston, Ian	All Disciplines	A12	9:00	Ballroom
Petersen, David	All Disciplines	T22	3:00	Ballroom
Peterson, Debbie	Behavioral Studies	E1	9:00	North Voyageurs
Peterson, James	All Disciplines	T9	3:00	Ballroom
Phan, Ngoc	St. Cloud State University Survey	S1	2:00	Mississippi
Piotrowski, Aaron	All Disciplines	T22	3:00	Ballroom
Plourde, Robert	All Disciplines	T14	3:00	Ballroom
Potocek, Meggan	All Disciplines	T11	3:00	Ballroom
		T12	3:00	Ballroom
Pradhananga, Amit	All Disciplines	A32	9:00	Ballroom
		T24	3:00	Ballroom
Priebe, Matthew	All Disciplines	T41	3:00	Ballroom
Pundsack, Thomas	All Disciplines	T26	3:00	Ballroom
Quernemoen, Kari	All Disciplines	A14	9:00	Ballroom
Qureshi, Umer	All Disciplines	T44	3:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Rajhkowa, Rupsmita	All Disciplines	T41	3:00	Ballroom
Ratike, Dana	All Disciplines	T4	3:00	Ballroom
Richards, Davian	All Disciplines	A1	9:00	Ballroom
Riley, Nathaniel	All Disciplines	T33	3:00	Ballroom
Robert, Rosten	Social Sciences	T48	3:00	Ballroom
Rock, Monica	All Disciplines	A17	9:00	Ballroom
Roering, Andrew	Natural Sciences	G4	10:00	Oak
Rogers, Jordan	Social Sciences	J4	12:10	North Voyageurs
Rohde, Scott	Biological Studies	O1	2:00	North Glacier
Roiko, Marijo	Natural Sciences	G5	10:20	Oak
Romero Sanchez, Martin	All Disciplines	A1	9:00	Ballroom
Rosenow, Lisa	Teaching English as a Second Language	U3	5:40	North Glacier
Rudolph, Sarah	All Disciplines	T29	3:00	Ballroom
Rutledge, Jordon	All Disciplines	T5	3:00	Ballroom
Ryan, Michael	Linguistics and Humanities	F3	10:00	South Voyageurs
Salad, Mohammad	Biochemistry	H1	11:00	North Glacier
Schleeter, Stacy	Fine Arts and Humanities	I2	11:20	South Glacier
Schmelzer, A.C.R.	All Disciplines	A4	9:00	Ballroom
Schwebach, Heather	St. Cloud State University Survey	S1	2:00	Mississippi
Schwiesow, Jessica	All Disciplines	A20	9:00	Ballroom
Severson, Nicole	St. Cloud State University Survey	S1	2:00	Mississippi
Sexton, Daniel	Geography	L6	12:15	Lady Slipper
Shatek, Nick	Transportation	D1	9:00	Granite
Sherman, Ruth	Social Sciences	J2	11:20	North Voyageurs
Sigfrid, Hilary	All Disciplines	A8	9:00	Ballroom
Sills, Laura	All Disciplines	A16	9:00	Ballroom
Singh, Sushil	All Disciplines	T42	3:00	Ballroom
Sjogren, Abbey	All Disciplines	T40	3:00	Ballroom
Slee, Heather	Teaching English as a Second Language	U4	6:00	North Glacier
Smith, Brandon	All Disciplines	T26	3:00	Ballroom
Southworth, Steven	All Disciplines	T30	3:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Speich, Brittany	St. Cloud State University Survey	S1	2:00	Mississippi
Stambaugh, Morgan	All Disciplines	T41	3:00	Ballroom
Stephenson, Jeffrey	All Disciplines	A18	9:00	Ballroom
Storlien, Joseph	All Disciplines	T19	3:00	Ballroom
Sun, Kyung	All Disciplines	T32	3:00	Ballroom
Swanson, Jackie	St. Cloud State University Survey	S1	2:00	Mississippi
Swenson, Clyde	All Disciplines	A8	9:00	Ballroom
Swingley, Lucas	Natural Sciences	G3	9:40	Oak
Terry, Jay	Science and Engineering	W3	5:40	Lady Slipper
Terry, John	Geography	L4	11:45	Lady Slipper
Thao, Pheng	Science and Engineering	R4	3:00	Granite
Thomas, Shauna	All Disciplines	A25	9:00	Ballroom
Thompson, Bradley	Geography	L2	11:15	Lady Slipper
Timp-Pilon, Michele	Teaching English as a Second Language	U4	6:00	North Glacier
Tipler, Lindsey	All Disciplines	T47	3:00	Ballroom
Tomporowski, Kristi	All Disciplines	A14	9:00	Ballroom
Trisko, Jenna	All Disciplines	A17	9:00	Ballroom
Tu, Liang	All Disciplines	T45	3:00	Ballroom
VanBlarcom, Noelle	All Disciplines	A14	9:00	Ballroom
Vang, Wang	Social Sciences	J3	11:50	North Voyageurs
VanVooren, Kim	All Disciplines	A20	9:00	Ballroom
Vlazny, Danielle	All Disciplines	T16	3:00	Ballroom
Vraa, Josh	All Disciplines	T41	3:00	Ballroom
Walters, Elizabeth	St. Cloud State University Survey	S1	2:00	Mississippi
	All Disciplines	T1	3:00	Ballroom
Wang, Tingting	All Disciplines	A18	9:00	Ballroom
Warn, Allison	All Disciplines	A20	9:00	Ballroom
Webber, Grant	Transportation	D2	9:20	Granite
Wilant, Laura	All Disciplines	A40	9:00	Ballroom
Willenbring, James	Science and Engineering	R1	2:00	Granite
Williams, Benjamin	All Disciplines	A24	9:00	Ballroom
Wirth, Justin	All Disciplines	T4	3:00	Ballroom

<b>Student Presenter</b>	<b>Session</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Witthus, Joel	All Disciplines	A45	9:00	Ballroom
Wong, Kuan Shen	All Disciplines	A11	9:00	Ballroom
Wong, Wai	Science and Engineering	W4	6:00	Lady Slipper
Wood, Heidi	Geography	L1	11:00	Lady Slipper
Worden, Danielle	All Disciplines	A23	9:00	Ballroom
Wren, Miranda	Behavioral Studies	E3	9:40	North Voyageurs
Yang, Data	Science and Engineering	R4	3:00	Granite
Yost, Chad	All Disciplines	A43	9:00	Ballroom
Zabka, Matthew	Economics	K3	11:40	South Voyageurs

# Project Sponsor Index

Project Sponsor	Department	Presentation Index	Time	Room
Aceves, Robert	Aviation	D2	9:20	Granite
		D3	9:40	Granite
Ahmad, Shahzad	Mass Communications	E2	9:20	North Voyageurs
Anda, Andrew	Computer Science	R1	2:00	Granite
Arriagada, Jorge	Biological Sciences	A3	9:00	Ballroom
		A30	9:00	Ballroom
Ashford, Julian	Biological Sciences	A46	9:00	Ballroom
Baker, Randal	Geography	L1	11:00	Lady Slipper
Baliga, Bantwal	Mechanical and Manufacturing Engineering	R4	3:00	Granite
Bekkala, Andrew		D4	10:00	Granite
Bender, Mitch	Environmental and Technological Studies	A32	9:00	Ballroom
		T19	3:00	Ballroom
		T31	3:00	Ballroom
		T37	3:00	Ballroom
Berila, Elizabeth	Women's Studies	J1	11:00	North Voyageurs
		J2	11:20	North Voyageurs
Blinnikov, Mikhail	Geography	A43	9:00	Ballroom
Branson, William	Mathematics	T1	3:00	Ballroom
Byun, Jeongmin	Mechanical and Manufacturing Engineering	D4	10:00	Granite
Campbell, Brian	Music	I3	11:40	South Glacier
Colle, Brian	Biological Sciences	A13	9:00	Ballroom
Covey, Steve	Mechanical and Manufacturing Engineering	W2	5:20	Lady Slipper
Dorn, Judy	English	I2	11:20	South Glacier
Dvorak, Michael	Chemistry	T32	3:00	Ballroom
Frank, Stephen	Political Science	S1	2:00	Mississippi
Gazal, Oladele	Biological Sciences	T3	3:00	Ballroom
		T6	3:00	Ballroom
		W4	6:00	Lady Slipper
Glazos, Michael	Electrical and Computer Engineering	A45	9:00	Ballroom
Godding, Phillip	Psychology	A17	9:00	Ballroom
Greaves, Ed	Political Science	F4	10:20	South Voyageurs
Gregory, Daniel	Chemistry	A42	9:00	Ballroom
		G4	10:00	Oak
		H2	11:20	North Glacier
Grossman, Philip	Economics	K1	11:00	South Voyageurs

<b>Project Sponsor</b>	<b>Department</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Hammes, Michelle Kukoleca	Political Science	S1	2:00	Mississippi
Hansen, Anthony	Earth and Atmospheric Sciences	A13	9:00	Ballroom
Harlander, John	Physics, Astronomy and Engineering Science	T30	3:00	Ballroom
		T35	3:00	Ballroom
Hauslein, Patricia	Biological Sciences	A21	9:00	Ballroom
Heiman, James	English	E1	9:00	North Voyageurs
Heneghan, Michael	Electrical and Computer Engineering	A47	9:00	Ballroom
Heroux, Michael	Computer Science	B2	9:20	Glacier North
Hou, Ling	Electrical and Computer Engineering	T44	3:00	Ballroom
Hughes, Patricia A.	Economics	K3	11:40	South Voyageurs
Jeannot, Michael	Chemistry	T11	3:00	Ballroom
		T12	3:00	Ballroom
		T33	3:00	Ballroom
Jensen, Ellen	Biological Sciences	A40	9:00	Ballroom
John, Gareth	Geography	L2	11:15	Lady Slipper
		L3	11:30	Lady Slipper
		L4	11:45	Lady Slipper
		L5	12:00	Lady Slipper
		L6	12:15	Lady Slipper
		P1	2:00	Lady Slipper
		P2	2:15	Lady Slipper
		P3	2:30	Lady Slipper
		P4	2:45	Lady Slipper
		P5	3:00	Lady Slipper
		P6	3:15	Lady Slipper
		T46	3:00	Ballroom
Johnson Warner, Susan	Nursing Science	A8	9:00	Ballroom
		T4	3:00	Ballroom
Julius, Matthew	Biological Sciences	A39	9:00	Ballroom
		A43	9:00	Ballroom
		A46	9:00	Ballroom
		G2	9:20	Oak
		T27	3:00	Ballroom
Koffi, Ettien	English	F1	9:00	South Voyageurs
Komai, Mana	Economics	K2	11:20	South Voyageurs
Kvaal, Christopher	Biological Sciences	A5	9:00	Ballroom
		A11	9:00	Ballroom
		A22	9:00	Ballroom
		G5	10:20	Oak
		T2	3:00	Ballroom
		T7	3:00	Ballroom
		T21	3:00	Ballroom

<b>Project Sponsor</b>	<b>Department</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Langley, Dean	Physics, Astronomy and Engineering Science	B4	10:00	Glacier North
Lenz, Brenda	Nursing Science	A8	9:00	Ballroom
		A10	9:00	Ballroom
		A14	9:00	Ballroom
		A34	9:00	Ballroom
		A36	9:00	Ballroom
		T4	3:00	Ballroom
		T29	3:00	Ballroom
Li, Lin	Statistics and Computer Networking	B3	9:40	Glacier North
Lidberg, Russell	Physics, Astronomy and Engineering Science	T26	3:00	Ballroom
		T30	3:00	Ballroom
		T32	3:00	Ballroom
Lo, Ming	Economics	V1	5:00	South Glacier
		V2	5:20	South Glacier
		V3	5:40	South Glacier
Lokken, Jayne	Psychology	M2	11:20	Mississippi
Mahroof-Tahir, Mohammad	Chemistry	A28	9:00	Ballroom
		G3	9:40	Oak
Mechelke, Mark	Chemistry	A23	9:00	Ballroom
		A27	9:00	Ballroom
		W3	5:40	Lady Slipper
Miller, Kenneth	Mechanical and Manufacturing Engineering	D1	9:00	Granite
Minger, Mark	Biological Sciences	A2	9:00	Ballroom
		T23	3:00	Ballroom
		T25	3:00	Ballroom
		T47	3:00	Ballroom
Mitchell, David	Biological Sciences	A19	9:00	Ballroom
Mohrbacher, Carol	English	A18	9:00	Ballroom
		U4	6:00	North Glacier
Motin, Susan	Information Media	A6	9:00	Ballroom
Mueller, Isolde	Foreign Languages and Literature	F3	10:00	South Voyageurs
Olson, John	Economics	A29	9:00	Ballroom
Onyiah, Leonard	Statistics and Computer Networking	T15	3:00	Ballroom
Ore, Tracy	Social Sciences	T48	3:00	Ballroom
Parikh, Manju	Political Science	A4	9:00	Ballroom
Petzold, Mark	Electrical and Computer Engineering	A1	9:00	Ballroom
Philippot, Raymond	English	I1	11:00	South Glacier

<b>Project Sponsor</b>	<b>Department</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Pickle, Michael	Special Education	A35	9:00	Ballroom
		M1	11:00	Mississippi
		T38	3:00	Ballroom
Pound, Kate	Earth and Atmospheric Sciences	A7	9:00	Ballroom
		T8	3:00	Ballroom
Protolipac, Daren	Psychology	T41	3:00	Ballroom
Przytula, Tomasz	Mass Communications	E2	9:20	North Voyageurs
		E3	9:40	North Voyageurs
Reagan, Michael	Biological Sciences	T16	3:00	Ballroom
Restani, Marco	Biological Sciences	O1	2:00	North Glacier
		O2	2:20	North Glacier
		O3	2:40	North Glacier
Rigopoulou-Melcher, Aspasia	Community Studies	L6	12:15	Lady Slipper
Robert, Marshall	Mechanical and Manufacturing Engineering	W2	5:20	Lady Slipper
Robinson, David	Statistics and Computer Networking	O1	2:00	North Glacier
Robinson, James H	English	F2	9:20	South Voyageurs
		U1	5:00	North Glacier
Rose, Charles	Environmental and Technological Studies	T18	3:00	Ballroom
		T24	3:00	Ballroom
Schmidt, Mark	Business Computer Information Systems	B1	9:00	Glacier North
Schoenfuss, Heiko	Biological Sciences	A37	9:00	Ballroom
		B5	10:20	Glacier North
		G1	9:00	Oak
		O4	3:00	North Glacier
		R3	2:40	Granite
		T14	3:00	Ballroom
Schorn-Rhoda, Mary Ann	Nursing Science	A10	9:00	Ballroom
		A34	9:00	Ballroom
		A36	9:00	Ballroom
		T29	3:00	Ballroom
Schrank, Gordon	Biological Sciences	T14	3:00	Ballroom
Schuh, Timothy	Biological Sciences	A31	9:00	Ballroom
Schultz, Emily	Sociology and Anthropology	J3	11:50	North Voyageurs
		J4	12:10	North Voyageurs
Schulze, Kim	Community Psychology	A33	9:00	Ballroom



<b>Project Sponsor</b>	<b>Department</b>	<b>Presentation Index</b>	<b>Time</b>	<b>Room</b>
Simpson, Patricia	Biological Sciences	A15	9:00	Ballroom
		T10	3:00	Ballroom
		T23	3:00	Ballroom
		T36	3:00	Ballroom
Singh, Sarjinder	Statistics and Computer Networking	W1	5:00	Lady Slipper
Splittgerber, Lisa	Foreign Languages and Literature	C1	9:00	Glacier South
		C2	9:20	Glacier South
		C3	9:40	Glacier South
Spry, Tami	Communication Studies	M3	11:40	Mississippi
Sreerama, Lakshmaiah	Chemistry	A9	9:00	Ballroom
		A12	9:00	Ballroom
		A38	9:00	Ballroom
		H1	11:00	North Glacier
		H3	11:40	North Glacier
		H4	12:00	North Glacier
		R2	2:20	Granite
		T17	3:00	Ballroom
		T22	3:00	Ballroom
Teutsch-Dwyer, Marya	English	U2	5:20	North Glacier
		U3	5:40	North Glacier
Triana-Echeverria, Luz	Foreign Languages and Literature	C4	10:00	Glacier South
Tubbiola, Maureen	Biological Sciences	A16	9:00	Ballroom
		T13	3:00	Ballroom
		T28	3:00	Ballroom
Turk, Don	Communication Studies	A44	9:00	Ballroom
Turner, Sandra	Biological Sciences	A41	9:00	Ballroom
Valdes, Leslie	Psychology	A25	9:00	Ballroom
		T5	3:00	Ballroom
		T43	3:00	Ballroom
Vogt, Timothy	Electrical and Computer Engineering	A24	9:00	Ballroom
Wagner, Steven	Political Science	S1	2:00	Mississippi
Wall, David	Geography	L6	12:15	Lady Slipper
Weisman, Robert	Earth and Atmospheric Sciences	A26	9:00	Ballroom
		T9	3:00	Ballroom
Wilson, Mark	Electrical and Computer Engineering	A1	9:00	Ballroom
Winter, Nathan	Chemistry	T40	3:00	Ballroom
Wurdak, Elizabeth	Biological Sciences	A19	9:00	Ballroom
Yao, Aiping	Electrical and Computer Engineering	T42	3:00	Ballroom
		T45	3:00	Ballroom

# Floor Plan for Atwood Memorial Center

